Owens Lake Phase 7a Dust Control Measures
Draft Environmental Impact Report

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General Manager
Ronald O. Nichols

Senior Assistant General Manager – Water System
James B. McDaniel

Owens Lake Dust Mitigation Program Manager
William Van Wagoner

Director of Environmental Affairs
Mark J. Sedlacek

Manager of Environmental Planning and Assessment
Charles C. Holloway

Prepared by:

Los Angeles Department of Water and Power
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Technical Assistance Provided by:

MWH Americas, Inc.
618 Michillinda Avenue, Suite 200
Arcadia, California 91007

Los Angeles LA DWP Department of Water and Power

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Section 1
Summary

The City of Los Angeles Department of Water and Power (LADWP, Department) is currently implementing the Owens Lake Dust Mitigation Program (OLDMP) on Owens Lake in order to reduce exceedances of the state and federal particulate matter (PM_{10}) air quality standards. [PM_{10} is defined as particulate matter with an aerodynamic diameter of 10 microns or less.] LADWP constructs and operates dust control measures (DCMs) on the lake in compliance with Agreements with the Great Basin Unified Air Pollution Control District (GBUAPCD) under the authority of California Health & Safety Code Sec. 42316, legal settlement agreements with GBUAPCD, lease agreements for use of state lands (administered by the California State Lands Commission (CSLC)), and other regulatory approvals. LADWP proposes to expand the OLDMP by construction and operation of the Owens Lake Phase 7a Dust Control Measures project (proposed project) in response to GBUAPCD Board Order 110317-01, dated March 17, 2011 (Order 110317-01, the Abatement Order).

In May 2011 a CEQA Initial Study was prepared by LADWP based on State CEQA Guidelines Appendix G, to determine whether construction and operation of the proposed project would result in significant effects on the environment. Since potentially significant effects were identified, LADWP determined that an EIR was needed to analyze those effects. A Notice of Preparation (NOP) of the EIR, along with the Initial Study, was prepared and filed with the State Clearinghouse on May 23, 2011 (**Appendix A**). The NOP/Initial Study was distributed to 39 entities, including potential responsible and trustee agencies, and interested organizations and individuals including 13 Native American tribal representatives. Comments on the scope and content of the EIR were received on the NOP from five regulatory agencies (**Appendix B**).

1.1 PROJECT BACKGROUND

In 1987, USEPA revised the National Ambient Air Quality Standards (NAAQS) by replacing total suspended particulates (TSP) as the indicator for particulate matter with PM_{10}. Also in 1987, the USEPA designated the Owens Valley Planning Area (an area extending from north of Independence to south of Olancha, and including Owens Lake) as nonattainment for the NAAQS for PM_{10}. The result of this designation was a plan, developed by GBUAPCD, designed to improve air quality through the reduction of PM_{10} emissions in all of the communities in the Owens Valley. The 1997 SIP and associated Board Order 070297-04 to the City of Los Angeles (City) mandated specific particulate matter controls to reduce dust emission from Owens Lake. After negotiation, the City and GBUAPCD entered into a Memorandum of Agreement (MOA) in July 1998 to mitigate dust. The 1998 MOA delineated the dust producing areas on the lake bed that needed to be controlled, specified what measures must be used to control the dust, and specified a timetable for implementation of the control measures. The MOA identified three control measures as BACM for Owens Lake: Shallow Flooding, Managed Vegetation, and Gravel Cover. The MOA called for phased implementation to permit the effectiveness of the control measures to be evaluated and modifications to be made as the control measures were being installed.

The first phase of dust control implemented by LADWP was Shallow Flooding – which involved flooding the area to be controlled until it is either inundated with a few inches of water or the soil becomes thoroughly saturated. The revised SIP in 2003 called for LADWP to implement DCMs on 29.8 square miles of the Owens lake bed by December 31, 2006. The 2008 SIP revised the 2003 SIP to add 15.1 square miles (9,664 acres; including 1.9 square miles of study areas) of additional DCMs on Owens Lake bed. As part of Phase 7, LADWP constructed 10.1 square miles of dust control by the compliance deadline of October 1, 2010. The 2008 SIP's attainment strategy provides that control of 43 square miles of the Owens Lake bed will result in the Owens Valley Planning Area (OVPA) achieving attainment of the PM_{10} NAAQS by 2017.

As a result of delays outside LADWP's control, LADWP and GBUAPCD entered into an Abatement Order that led to the Phase 7a Project. The Abatement Order called for installation of dust control on approximately 3.1 square miles on areas identified in the Order as "Phase 7a areas." LADWP has the discretion to select BACM, or conduct testing of new or modified BACM, on up to one-third (0.33) square mile of the Phase 7a study area, specifically in DCA T12-1. The Abatement Order also states, that in order to decrease water use on Owens Lake, approximately 3.0 square miles of existing Shallow Flood controls may be transitioned to any combination of BACM in order to provide a water supply for new dust controls. The Abatement Order also expressly acknowledges that during construction of the Transition Areas, the Transition Areas may not be compliant at all times with the BACM requirements in Governing Board Order No. 080128-01 and, thus, LADWP will take "Reasonable Precautions" to control emissions to the extent practicable during construction of the Transition Areas pursuant to an approved Dust Control Plan.

Also, in order to secure a variance to cover the delays for the Phase 7 project that were outside LADWP's control (which also led to the Phase 7a project, discussed above), GBUAPCD required LADWP to install dust controls on an additional 2.03 square miles of Owens Lake. This project, known as Phase 8, consists of 2.03 square miles of Gravel Cover, and was not required as part of the 2008 SIP attainment strategy. Therefore, LADWP has committed to controlling dust on approximately 45 square miles of Owens Lake, 2 square miles more than was required in the 2008 SIP for the OVPA to reach attainment.

1.2 PROJECT OBJECTIVE

The objective of the Phase 7a project is to implement dust control measures on Owens Lake to meet regulatory dust control requirements without increasing water commitments while maintaining existing habitat, improving aesthetics, providing safe limited public access, preserving cultural resources, and utilizing existing infrastructure and vegetation.

1.3 PROJECT LOCATION AND SETTING

The study area for the Phase 7a project is 3.1 square miles of Owens Lake bed (currently predominantly barren playa) proposed for dust control, 3.4 square miles of existing Shallow Flooding DCAs proposed for transition to BACM Hybrid or Gravel Cover, and adjacent areas proposed for roadway improvements, turnouts and other infrastructure, and a water supply pipeline (**Figure 1-1**). The 110-square-mile Owens Lake is located in Inyo County, California, approximately 5 miles south of the community of Lone Pine and approximately 61 miles south of the city of Bishop. Owens Lake is bounded by State Route (SR) 136 to the north and east, SR 190 to the south, and U.S. Highway (U.S.) 395 to the west.

1.4 PROJECT DESCRIPTION

The original Phase 7a Project consists of 3.1 square miles of dust control in six DCAs and 3.4 square miles of transitioned dust controls in seven existing DCAs for a total project area of 6.5 square miles. LADWP will implement current BACM including Gravel Cover, Shallow Flooding, and Managed Vegetation. DCA T12-1 is the site of a Tillage BACM test. The Phase 7a project components are:

- Shallow Flooding in T1A-4 and a portion of T37-2
- Managed Vegetation in T32-1 and portions of T37-1 and T37-2
- Gravel Cover in T1A-3 and a portion of T37-1
- Tillage BACM test in T12-1

Water demand related to implementation of BACM on the six primary Phase 7a DCAs will be balanced with water conservation measures at seven existing DCAs, including:

- Conversion of approximately 3.2 square miles of existing Shallow Flooding to a hybrid of BACM including Managed Vegetation, Gravel Cover and Shallow Flooding (Transition Areas). The Transition Areas are: T1A-2_a, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b.
- Conversion of existing Shallow Flooding areas T35-1 and T35-2 to Gravel Cover.

The project also includes: construction of three new turnout facilities and modification to four existing turnout facilities; irrigation and drainage systems and other infrastructure to support Shallow Flooding, Managed Vegetation and Tillage; construction of public amenities such as trails, boardwalks, and visitor outlooks; installation or reconfiguration of DCA berms; improvement of an access road; re-routing of the existing Lake Minerals Road to the new T1A-4 perimeter berm; and, construction of a new water supply pipeline.

Based on analysis conducted for the project (described in **Section 4.4**), LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) in order to reduce impacts on significant cultural resources to less than significant levels, and to reduce dust to the maximum extent feasible. Under the environmentally superior alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control.

Proposed DCMs on the Phase 7a DCAs are summarized in **Table 1-1** and described as follows:

Table 1-1
Original Phase 7a Dust Control Areas

	DCA	Shallow Flooding (SF) (acres)			Managed Vegetation (MV) (acres)			Tillage (acres)	Gravel Cover (acres)	Total (acres)
		Pond Shallow Flooding	Lateral Shallow Flooding	Total SF	Seeded Shrub/Dry Meadow	Seeded Alkali Meadow	Total MV			
Primary 7a DCAs	T1A-3								518	518
	T1A-4		620	620						620
	T12-1							211		211
	T32-1				80 - 91	14 - 17	108			108
	T37-1				39 - 43		43		94	137
	T37-2		310	310*	5 - 10	18 - 28	38			378**
Transition Areas	T1A-2_a		72	72		169 - 188	188			260
	T28N	58	96	154	39 - 42	144 - 154	196		104	454
	T28S	80	105	185	12 - 14	36 - 39	53		62	300
	T30-1	204	66	270	72 - 77	325 - 346	423			693
	T36-1_b	5		5	23 - 25	260 - 279	304			309
	T35-1								69	69
	T35-2								95	95

Notes: Gray shading indicates primary Phase 7a DCAs. Remaining DCAs are currently Shallow Flooding areas proposed as Transition Areas. Acreage numbers represent the total area per DCA where irrigation systems will be installed, including additional project features such as berms, pump stations, turnouts, trails, and other facilities. Managed Vegetation acreage ranges reflect areas that will be seeded. Actual acreage of vegetation will vary due to site-specific soil and drainage conditions.

* 50 acres are Shallow Flooding Transition Zone - anticipated to be vegetated or partially vegetated.

** Total includes areas that are not anticipated to be altered by project construction.

Shallow Flooding - This DCM consists of releasing fresh and/or recycled water into a DCA and allowing it to spread, wet the surface, and thereby suppress windborne dust during the dust season (October 1st to June 30th).

Managed Vegetation – Vegetation on the playa reduces sand motion and soil erosion. Aboveground cover acts as a wind break, lowering the velocity at the playa surface. Managed Vegetation will include areas that are shrub dominated and areas that will be predominantly meadow. In addition to saltgrass, 39 species have been proposed to increase the habitat diversity of the Managed Vegetation areas.

Gravel Cover – This dust control method is a 4-inch-thick layer of coarse gravel over a nonwoven geotextile fabric to prevent gravel from settling into lake bed sediments and thereby losing effectiveness in controlling dust emissions.

Tillage – Tillage is commonly used to control wind erosion in agricultural and arid regions around the world. It works by roughening the soil surface, rendering it more resistant to wind erosion. Surface roughness reduces the wind velocity so that windblown soil particles like sand are trapped.

BACM Hybrid - Under the Hybrid concept, DCAs will be a mix of Shallow Flooding types (ponded water, saturated soil, and dry land), Managed Vegetation (shrub/dry meadow and alkaline meadow), with areas of Gravel Cover. Managed Vegetation areas will generally be up gradient of ponded or saturated areas. Broad beds with furrows will be incorporated into some of the DCAs providing topographic variations and enhancing natural drainage. Subtle topographic variations will soften the historically straight lines of the berm roads and ponded areas. Meandering edges and potentially variations in the rock and color size of the gravel will also be incorporated.

1.5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Based on the analyses presented in the Initial Study (**Appendix A**), and in **Section 4** of this EIR, **Table 1-2** summarizes the impacts of the proposed project and the mitigation measures identified to reduce potentially significant effects.

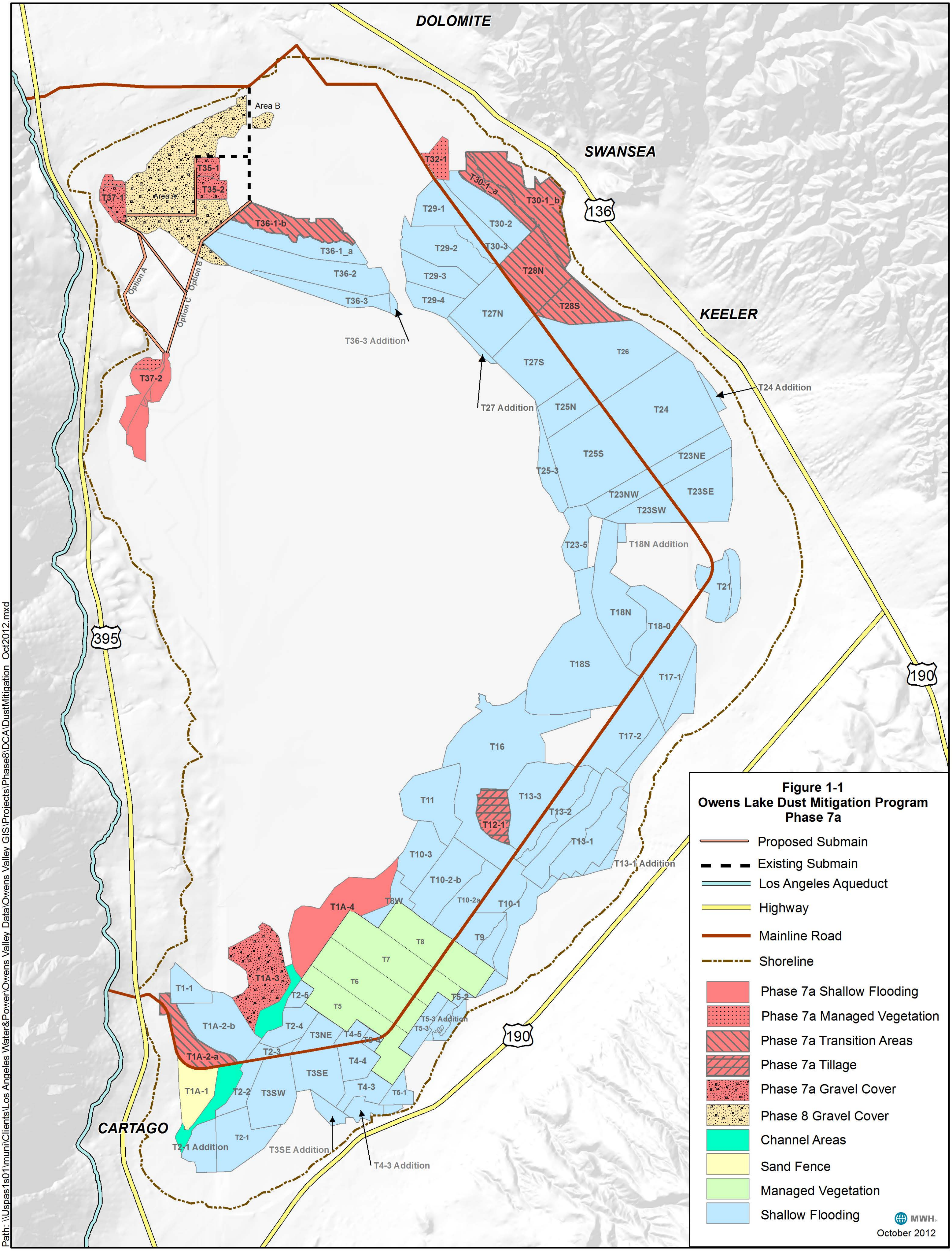

Figure 1-1
Owens Lake Dust Mitigation Program
Phase 7a

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Table 1-2
Summary of Proposed Project Impacts and Mitigation Measures

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Aesthetics	• Reduced views of Shallow Flooding and barren playa; increased views of Managed Vegetation and Gravel Cover. • Improved aesthetics of 3.4 square miles of Transition Areas. • Temporary lighting confined to construction areas.	Less than Significant	No mitigation required.	Less than Significant
Agriculture and Forest Resources	• No agricultural or forest lands will be disturbed. • No disturbance to active ranches adjacent to the lake.	No Impact	No mitigation required.	No Impact
Air Quality	• Project will substantially reduce dust emissions from Owens Lake; consistent with the applicable air quality plan – the 2008 SIP. • Construction activity and equipment will temporarily emit particulate matter, a nonattainment pollutant. • Construction and maintenance equipment will temporarily emit less than significant levels of reactive organic gases, carbon monoxide, nitrogen oxides, and sulfur oxides.	Significant for dust emissions during project construction and maintenance Beneficial for particulate matter reductions from project operations	**AIR-1. Fugitive Dust Emissions Control and Minimization.** In compliance with GBUAPCD Abatement Order 110317-01, a Dust Control Plan will be implemented during construction. For the Transition Areas, the plan will specify measures to be taken when removing existing DCAs from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to: • Temporary sand fences shall be installed where feasible as soon as practicable without delaying project completion and shall be maintained as necessary until areas of Managed Vegetation have been established • Water trucks shall be used as necessary and feasible during construction • Tillage shall be implemented where soil conditions allow • Placement of a gravel surface on interim staging areas within the DCA used by the contractor • Construction activities shall cease during high wind events At a minimum, one or more of the applicable best available control measures shall be used during active operations to minimize fugitive dust emissions from each fugitive dust source type. **AIR-2. Low Emissions Tune-ups Schedule.** A schedule of low emissions tune-ups shall be prepared for all equipment operating on site for more than 10 working days.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			AIR-3. Low-emission Equipment Utilization. Low-emission equipment/mobile construction equipment shall be used for project construction to the maximum extent practical, feasible, and available. **AIR-4. Low-emission Mobile Vehicle Utilization during Construction.** Low-emission or alternative-fueled mobile vehicles shall be used during project construction to the maximum extent practical, feasible, and available. In addition, carpooling of construction workers shall be encouraged. **AIR-5. Low-emission Mobile Vehicle Utilization during Operation.** Hybrid, low-emission (CA LEV II; PZEV, SULEV; or ULEV) or alternative-fueled mobile vehicles, such as electric or fuel cells, shall be used for the proposed project site to the maximum extent practical, feasible, and available. In addition, carpooling of operations and maintenance workers shall be encouraged.	
Biological Resources	• Special status bird species, including Snowy Plover, are known for the project site (Snowy Plover nests are documented adjacent to Transition Areas) and could be adversely impacted during project construction and maintenance activities, including by construction lighting. • Active bird nests of other species could be disturbed by project construction activity, including by construction lighting. • Project will increase vegetated area and species diversity on Owens Lake – a beneficial impact. • Project will increase habitat values in the Transition Areas – a beneficial impact.	Significant	**BIO-1. Lake Bed Worker Education Program.** To minimize potential direct impacts to Snowy Plover from construction activities, LADWP shall continue the lake bed worker education program consistent with the previous approach and per CDFW recommendations. The program shall be based on Snowy Plover identification, basic biology and natural history, alarm behavior of the Snowy Plover, and applicable mitigation procedures required of LADWP and construction personnel. The program shall be conducted by a biologist familiar with the biology of the Snowy Plover at Owens Dry Lake and familiar with special status plant and wildlife species of the Owens Lake basin. The education program shall explain the need for the speed limit in the Snowy Plover buffer areas and the identification and meaning of buffer markers. All construction, operation, and maintenance personnel working within the project area shall complete the program prior to their working on the lake bed. A list of personnel who have completed the education program shall be maintained and made available to GBUAPCD upon request. **BIO-2. Preconstruction Surveys for Snowy Plover.** To minimize potential direct impacts to Snowy Plover within the project area due to construction activities, LADWP shall conduct a preconstruction survey for Snowy Plover in all potential Snowy Plover habitat prior to any construction activity that is performed during the Snowy Plover breeding season (March 15 to August 15). Preconstruction surveys shall be performed no more than 7 days prior to the start of ground-disturbing activities. A 200-foot buffer shall be placed around all active Snowy Plover nests that are discovered within the construction area. This buffer shall protect the plover nest from both destruction and construction noise. Green-colored stakes of less than 60 inches in height shall be used to mark buffer edges, with stakes spaced at approximate cardinal directions. The location of the nest (global positioning system coordinates) and current status of the nest shall be reported within 24 hours of discovery to GBUAPCD. Maps of Snowy Plover nest locations shall be posted at the construction office and made available to all site personnel and GBUAPCD staff. The activity of the nest shall be monitored by a biological monitor, as per existing guidelines for the North Sand Sheet and Southern Zones dust control projects and any revisions to the monitoring protocol that have been approved by CDFW. Active Snowy Plover nests shall be	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			monitored at least weekly. The nest buffer shall remain in place until such time as the biological monitor determines that the nest is no longer active and that fledglings are no longer in danger from proposed construction activities in the area. Buffers shall be more densely marked where they intersect project-maintained roads. Vehicles shall be allowed to pass through nest buffers on maintained roads at speeds less than 15 miles per hour, but shall not be allowed to stop or park within active nest buffers. Permitted activity within the nest buffer shall be limited to foot crews working with hand tools and shall be limited to 15-minute intervals, at least one hour apart, within a nest buffer at any one time. **BIO-3. Snowy Plover Nest Speed Limit.** To minimize potential direct and cumulative impacts to Snowy Plover and other sensitive biological resources from vehicles construction activities, LADWP shall implement a speed limit of 30 miles per hour within all active construction areas on Owens Dry Lake during construction of dust control measures. Speed limits shall be 15 miles per hour within active Snowy Plover nest buffers. Designated speed limits for other construction areas outside of active nest buffers shall be maintained at 30 miles per hour where it is determined to be safe according to vehicle capabilities, weather conditions, and road conditions. Site personnel and GBUAPCD staff shall be informed daily of locations where active nest buffers overlap with roads in the construction area. Signs shall be posted that clearly state required speed limits. Speed limit signs shall be posted at all entry points to the lake. The number of speed limit signs shall be kept at a minimum near active Snowy Plover nest areas to reduce potential perches for raptors and other Snowy Plover predators and shall be outfitted with Nixalite or the functional equivalent if greater than 72 inches (increased from the original 60 inches) in height at entry points to the lake and 60 inches in height by active Snowy Plover nest areas. **BIO-4. Lighting Best Management Practices.** To minimize indirect impacts to nesting bird species associated with project lighting during construction activities, LADWP shall institute all best management practices to minimize lighting impacts on nocturnal wildlife consistent with previous requirements and CDFW recommendations. Best management practices include those listed below, and are included in the Project Description of the GBUAPCD 2008 State Implementation Plan Subsequent Environmental Impact Report. Previous construction has occurred during nighttime hours to complete construction schedules and to prevent personnel from working during times of high temperatures. If night work is deemed necessary, then construction crews shall make every effort to shield lighting on equipment downward and away from natural vegetation communities or playa areas, and especially away from known nesting areas for Snowy Plovers during the nesting season (March to August). All lighting, in particular any permanent lighting, on newly built facilities shall be minimized to the greatest extent possible, while still being in compliance with all applicable safety requirements. Required lighting shall be shielded so that light is directed downward and away from vegetation or playa areas.	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			BIO-5. Preconstruction Surveys for Nesting Birds. If tree or shrub removal activities are scheduled to occur during the bird breeding season (January 15 to July 31), pre-construction surveys for bird nests shall be conducted no more than 7 days prior to the start of ground-disturbing activities. Surveys shall be conducted in areas of suitable nesting habitat that will be impacted by construction. Active nests will be marked at a safe distance with visible flagging and the construction crew supervisor will be made aware of these locations. Construction may commence in all areas without active bird nests. All bird nests will remain undisturbed while they are active. After a nest ceases to be active (fledges or fails), and the qualified biologist has made this determination, construction may proceed in the area. If construction is initiated in one breeding season and persists into subsequent breeding seasons, additional surveys are not necessary unless construction activities involve additional tree or shrub removal	
Cultural Resources	• Potential exists for presently unidentified significant historic resources to be disturbed during project construction, if any are present in the project areas. • Project construction has the potential to dislodge, relocate, crush, and otherwise cause substantial adverse changes to unique cultural resources recommended as eligible under the CRHR. • Two unevaluated archaeological sites are located in the project area and construction could disturb significant resources, if any are present in these areas. • Potential exists for presently unidentified significant archaeological resources to be disturbed during project construction, if any are present in the project areas. • The project has the potential to directly destroy unevaluated, but potentially unique, paleontological resources or sites.	Significant	**CR-1. Avoidance of resources immediately adjacent to the Phase 7a Project Area to the extent feasible – using a 100-foot buffer around archaeological sites.** Construction activities and heavy vehicle travel could inadvertently damage intact portions of cultural resources adjacent to the various Phase 7a project areas. A qualified archaeologist shall prepare maps depicting archaeological sites with a 100-foot buffer as environmentally sensitive areas. These maps shall be available for cultural resources monitors and construction crews to use during all construction activities and vehicle transportation through the Phase 7a Project Area. **CR-2. Cultural Resources Construction Monitoring Program.** Impacts to surface and subsurface cultural resources not previously identified shall be mitigated through preparation of a cultural resources monitoring plan and its implementation during construction or other ground-disturbing activities. The Cultural Resources Construction Monitoring Program shall include: • The retention of a qualified archaeologist to implement a monitoring and recovery program. A "qualified archaeolologist" should meet the U. S. Secretary of the Interior's Historic Preservation Professional Qualification Standards for Archaeology. The qualifications of the archaeologist shall be submitted to the responsible agency (CSLC) for approval. • The Lone Pine Paiute-Shoshone tribe shall be contacted prior to the start of project construction. Qualified Lone Pine Paiute-Shoshone cultural resources monitors shall be afforded an opportunity to be present during earthwork and excavation activities associated with construction of the Phase 7a project. • The qualified archaeologist shall be required to secure a written agreement with a recognized museum repository, such as the University of California, Riverside, regarding the final disposition and permanent storage and maintenance of any unique archaeological resources or historical resources recovered as a result of the archaeological monitoring, as well as corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the	Significant for the original Phase 7a Project (3.1 square miles of dust control) Less than significant for the Avoidance Alternative

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. • LADWP shall require the qualified archaeologist to provide cultural resources awareness training prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique archaeological resource, historical resource, or human remains are encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified archaeologist will also prepare and distribute informative Fact Sheets regarding archaeological and Native American sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the archaeologist, including a telephone number where they can be reached by the construction contractor, as necessary. • The qualified archaeologist shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in T1A-3, T1A-4, T32-1, T37-1, and T37-2, as well as in the Phase 8 project area for installation of the water supply pipeline to T37-2. Monitors will move among construction locations as directed by the cultural resources manager and in consultation with the Construction Contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils will not require monitoring. DCA parcel T12-1 and the Transition Areas (T1A-2_a, T28N, T28S, T30-1, T36-1_b, T35-1, and T35-2) were previously disturbed for prior phases of the dust control project. In those areas, it will be up to the discretion of the archaeological monitor, to determine which areas will require monitoring and how frequently. The archaeologist shall coordinate with the construction manager to divert work around the discovery of any potentially significant archaeological resource, if any are encountered. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP and the qualified archaeologist. • If construction personnel discover a cultural resource in the absence of an archaeological monitor, construction shall be halted within 100 feet of the find, and a qualified archaeologist shall be contacted to make an immediate evaluation of significance and recommend appropriate treatment of the resource. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP and the qualified archaeologist.	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			• The qualified archaeologist shall ensure that all construction personnel shall be informed of the requirements to notify the Inyo County coroner within 24 hours of the discovery of human remains on state lands (as required by Public Resources Code 5097). • The qualified archaeologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including tribal representatives, and the results of monitoring, including the recovery of archaeological resources, sketches of recovered materials, and associated geographic site data. Within 120 days of the completion of the archaeological monitoring, a monitoring report shall be submitted to LADWP, CSLC, and to the Eastern Information Center at the University of California, Riverside. The report, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to unique archaeological resources or historical resources. **CR-3. Avoidance of Unevaluated and Other Resources.** A qualified archaeologist shall prepare maps delineating archaeological sites 7A-117 and CA-INY-6660 and CA-INY-8918 plus a 100-foot buffer around each of the sites. No earthwork or vehicle travel shall occur in these sites or the buffer areas during Phase 7a construction or maintenance activities. Construction activities in the vicinity of these sites shall be monitored by an archaeological monitor. **CR-4. Unevaluated Resources on the Access Roadway.** A qualified archaeologist shall compare the work area map for the access roadway with the locations of known cultural resources. Cultural resources sites that overlap with the work area map that cannot be avoided shall be evaluated as part of a Phase II archaeological investigation prior to ground disturbances in the area (CEQA Sections 21083.1 and 21083.2). If determined to qualify as CRHR-eligible sites, the roadway shall be re-designed to avoid the resources to the maximum extent feasible. The Lone Pine Paiute-Shoshone tribe shall be consulted during the re-design process. Where re-design is infeasible, a Phase III data recovery investigation, or other appropriate measures, for the portions of any CRHR-eligible sites that would be disturbed by roadway improvement shall be conducted (CEQA Section 21083.2). Relevant archaeological investigation and/or excavation permits shall be obtained from the California State Lands Commission prior to the start of Phase II and/or Phase III work. The Lone Pine Paiute-Shoshone tribe shall be contacted prior to implementation of Phase II and/or Phase III work and qualified tribal monitors shall be afforded an opportunity to be present during cultural resources investigations for the access roadway.	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			CR-5. Unanticipated Discovery of Human Remains on State Lands. Upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any areas that are reasonably suspected to overlie adjacent human remains until the following conditions are met: • The Inyo County Coroner has been informed and has determined that no investigation of the cause of death is required. • If the remains are of Native American origin, the Native American Heritage Commission (NAHC) will be contacted. In consultation with the Most Likely Descendant, the NAHC and qualified archaeologist shall determine the treatment and disposition of the human remains and any associated grave goods, with appropriate dignity, as provided in Public Resources Code Section 5097.98. • If the remains are not of Native American origin, the Inyo County Coroner will make a determination as to the disposition of the remains. Ground-disturbing activities may continue once compliance with all relevant sections of the California Health and Safety Code have been addressed and authorization to proceed issued by the Inyo County Coroner, LADWP, and the qualified archaeologist. **CR-6. Paleontological Resources Construction Monitoring Program.** Impacts to surface and subsurface paleontological resources not previously identified shall be mitigated through preparation of a written paleontological monitoring plan to be implemented during construction ground-disturbances, including trenching, grading, and other earth-moving activities. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. LADWP shall require that construction monitoring, salvage, and recovery of unique paleontological resources is consistent with standards for such recovery established by the Society of Vertebrate Paleontology (SVP). The Paleontological Resources Construction Monitoring Program shall include: • LADWP shall retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work. A “qualified paleontologist” is defined as a practicing scientist who meets the qualifications established by the SVP. The qualifications of the paleontologist shall be submitted to the responsible agency (CSLC) for approval. • The qualified paleontologist shall be required to secure a written agreement with a recognized repository, regarding the final disposition, permanent storage, and maintenance of any significant fossil remains and associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. In addition, a technical report shall be completed.	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			The final disposition of paleontological resources recovered on State lands must be approved by the CSLC. • The paleontological monitor may be a qualified paleontologist or a cross-trained archaeologist or geologist working under the supervision of a qualified principal paleontologist. The function of the monitor is to identify potential resources and recover them with appropriate scientific data. • LADWP shall require the qualified paleontologist to provide a paleontological resources briefing prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique paleontological resource is encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified paleontologist will also prepare and distribute informative Fact Sheets regarding paleontological sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the paleontologist, including a telephone number where they can be reached by the construction contractor, as necessary. • The paleontological monitor shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in the Phase 7a project area. Monitors will move among construction locations as directed by the project cultural resources manager and in consultation with the Construction Contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. The monitor shall coordinate with the construction manager to divert work around potentially significant paleontological resources, if any are encountered. Prior to the resumption of ground-disturbing activities in the immediate vicinity of the paleontological resources, LADWP shall provide the monitor with the necessary resources to identify and implement a program for the appropriate disposition. • Discovery of fossil-producing localities shall require that stratigraphic columns be measured and that geologic samples be taken for analysis. • If fossil localities are discovered, the paleontologist shall collect controlled samples for processing. All fossils recovered shall be prepared, identified, and cataloged before donation to the accredited repository designated by the lead agency. • In conjunction with the subsurface work, the paleontological monitor shall inspect exposed sediments, including microscopic examination of matrix, to determine if fossils are present. In addition, the qualified paleontologist shall be available on call to respond to unanticipated discoveries. • If construction personnel discover a paleontological resource in the absence of a paleontological monitor, construction shall be halted and a qualified paleontologist shall be contacted to make an immediate evaluation	

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
			of significance and recommend appropriate treatment of the resource. If the material is determined to be significant, the qualified paleontologist shall prepare and implement a treatment plan in consultation with LADWP. Construction activity shall not resume until authorization has been provided by LADWP and the qualified paleontologist. • The qualified paleontologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including the tribal representative, and the results of monitoring, including the recovery of paleontological resources, sketches of recovered materials, and associated geographic site data. Within 120 days of the completion of the paleontological monitoring, a final mitigation report shall be submitted to LADWP, and CSLC with an appended, itemized inventory of the specimens observed and collected. The report should include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and any technical or specialist's reports as appendices. The report and inventory, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to paleontological resources.	
Geology and Soils	• The site is located in a seismically active area but no habitable structures are proposed. • Soil erosion during construction will be controlled with standard best management practices.	Less than Significant	No mitigation required.	Less than Significant
Greenhouse Gas Emissions	• Construction equipment and gravel hauling trucks will emit greenhouse gases including CO_2, CH_4, and N_2O. Amortized construction emissions will not exceed established thresholds. • No substantial increase in greenhouse gas emissions for project operation.	Less than Significant	No mitigation required, however, mitigation measures to reduce air emissions will also reduce greenhouse gases from project construction.	Less than Significant
Hazards and Hazardous Materials	• Hazardous materials use limited to fuels, oils and lubricants for construction and maintenance equipment and vehicles.	Less than Significant	No mitigation required.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
	• Project site is not a known hazardous materials site.			
Hydrology and Water Quality	• Construction impacts on stormwater quality will be controlled with standard best management practices. • Project will redirect storm flows by installation of berms. Flows will continue toward the brine pool as under existing conditions. • Project is essentially water neutral and will not impact groundwater.	Less than Significant	No mitigation required.	Less than Significant
Land Use and Planning	• Reduction in dust emissions will improve public health and safety, a public trust benefit. • Water conservation, recreational amenities, and habitat enhancements are public trust benefits.	Less than Significant	No mitigation required.	Less than Significant
Mineral Resources	• Project will use local mineral resources for Gravel Cover but will not result in a substantial loss of availability of the resource.	Less than Significant	No mitigation required.	Less than Significant
Noise	• Construction vehicles and equipment will (temporarily) increase noise on the lake. Residents are a minimum of 1,000 feet away and noise levels will not exceed established thresholds. • Project operation will result in noise generation from periodic maintenance activities, similar to existing conditions.	Less than Significant	No mitigation required.	Less than Significant

Environmental Topic	Impact Discussion	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Population and Housing	• No habitable structures or expansion of growth-inducing infrastructure systems are proposed. • Temporary addition of construction jobs during project implementation.	Less than Significant	No mitigation required.	Less than Significant
Public Services	• Project does not include habitable structures or other elements that would substantially increase the need for public services.	Less than Significant	No mitigation required.	Less than Significant
Recreation	• Project will not affect population; therefore it will not increase the need for recreational facilities. • Temporary restrictions on public access during construction for safety. • Project includes new trails, boardwalks, visitor overlooks, and berm roads for that will increase public access and recreational opportunities.	Less than Significant for temporary public access restrictions Beneficial impact from creation of additional recreational amenities	No mitigation required.	Less than Significant
Transportation and Traffic	• Construction workers commuting to the site, delivery vehicles and gravel haul trucks will increase traffic on area roadways. • Increased traffic hazard related to gravel haul trucks crossing at SR 136.	Less than Significant for increased traffic volumes Significant for increased traffic hazard	**Trans-1.** LADWP shall develop and implement a Traffic Work Safety Plan to be approved by Caltrans for the construction phase of the Phase 7a project. The Plan will address the use of warning lights, signs, traffic cones, signals, flag persons and/or comparable measures as needed to maintain safe travel of haul trucks across SR 136 during construction. **Trans-2.** LADWP shall repair damage to SR 136 in the areas near the mines where project related truck traffic crosses SR 136. Prior to the start of construction activity, existing conditions at the crossings will be documented. After construction of Phase 7a is complete, physical damage documented at the SR 136 crossings will be repaired.	Less than Significant
Utilities and Service Systems	• Project does not include habitable structures or other elements that would substantially increase the need for utilities and service systems.	Less than Significant	No mitigation required.	Less than Significant

1.6 RELATED PROJECTS AND CUMULATIVE IMPACTS

Related projects are projects that may have impacts that are cumulative with the proposed project. Eight projects have been identified for the project area and include other dust control activities on Owens Lake, a pump station on the Owens River, solar projects on or near the lake, a Master Plan for projects on the lake, expansion of an existing water bottling plant south of the lake, and a modeling study of the groundwater under the lake.

Aesthetics. The existing network of DCMs on the lake is a highly engineered and managed system. Design of the Phase 7a project will include enhanced habitat areas, recreational amenities, and aesthetic improvements (i.e., meandering edges and transitions to soften the historically straight lines of the berm roads and ponding areas, groupings of boulders, variation in vegetation type and height, variation in rock size and color, etc.). These improvements will improve the visual character of the lake. Overall, the combined visual impact of the proposed project and the related projects is less than cumulatively considerable.

Air Quality. Since mitigation will be incorporated into projects to minimize fugitive dust emissions during construction and operation, the impact of equipment and vehicle air pollutant emissions is not cumulatively considerable. The operational impact of Phase 7a, Phase 8, solar projects on gravel cover, and other dust mitigation efforts on the lake is cumulatively beneficial regarding reduction of PM_{10} emissions.

Biological Resources. The Phase 7a project would increase habitat values in 3.4 square miles of the Transition Areas, consistent with Owens Lake Master Plan habitat goals. Similarly, the Owens Lake Groundwater Evaluation Project (OLGEP) is focused on defining groundwater pumping alternatives for dust control that are protective of existing habitat. The Solar Demo project is planned for an existing area of Gravel Cover (part of the Phase 8 area) which would minimize impacts on biological resources. For related project that are not yet constructed, it is anticipated that mitigation measures would be incorporated into the projects to reduce impacts on biological resources during construction. Overall, the impact of the proposed project and the related projects on biological resources is less than cumulatively considerable.

Cultural Resources. Projects proposed for Owens Lake and the surrounding area that include ground disturbing activities have the potential to disturb significant cultural resources. Without mitigation, the disturbance to unique historic, archeological, and/or paleontological resources could result in the loss of important information about the prehistoric and historic development in the Owens Lake region.

Impacts from construction of the related projects together with the cultural resources impacts of the Phase 7a project would be cumulatively considerable. However, implementation of the Phase 7a Avoidance Alternative and the mitigation measures outlined in Section 4.4, and mitigation as applicable for future related projects would protect significant impacts on cultural resources. The combined impact of the Phase 7a Avoidance Alternative and related projects would be less than cumulatively considerable.

Hydrology and Water Quality. Construction of the Phase 7a project and the related projects will locally alter drainage patterns on Owens Lake, however, the overall drainage pattern will continue to be towards the brine pool. Pollutant control during construction to avoid contamination of stormwater would be implemented for all projects over 1 acre, in compliance with NPDES Stormwater permitting requirements. Increases in vegetated area, as proposed under the Phase 7a project would reduce surface water runoff. The combined impact of the proposed project and the related projects on drainage patterns and water quality is therefore less than cumulatively considerable. The proposed Phase 7a project is essentially water neutral and will not have any adverse impact on groundwater. Overall, the combined groundwater impact of the proposed project and the related projects is less than cumulatively considerable.

Land Use. Combined, the Phase 8 and the proposed Phase 7a project will result in approximately 3.5 square miles of Gravel Cover on Owens Lake. Cumulatively, these projects will reduce dust emissions, an improvement to public health and safety, and a public trust benefit. Since these projects and the other related projects would not conflict with any applicable land use plan, policy, or regulation, the combined land use impact of the proposed project and the related projects is less than cumulatively considerable.

Recreation. The Phase 7a project includes limited public access opportunities and recreational amenities such as boardwalks, trails, access berms and visitor overlooks. If additional dust control or solar projects are developed on the lake, these features could be connected to other recreational amenities, as feasible. This would be consistent with the goals of the Owens Lake Master Plan. The draft Master Plan (December 2011) notes that Phase 7a is an example of how the Master Plan framework might be implemented. Overall, the combined impact on recreation of the proposed project and the related projects is less than cumulatively considerable.

1.7 ALTERNATIVES TO THE PROPOSED PROJECT

The following alternatives to the proposed project were evaluated:

- **No Project –** no construction of dust control on 3.1 square miles of Owens Lake and no transition of 3.4 square miles of existing Shallow Flooding to BACM Hybrid
- **Avoidance Alternative –** Construction of the proposed project in all areas except 350 acres where there are known significant cultural resources
- **Expanded Avoidance Alternative** - Construction of the proposed project in all areas except the 350 acres where there are known significant cultural resources and no construction in 60 additional acres identified by the Lone Pine Paiute-Shoshone as culturally sensitive
- **Avoidance Alternative with Soil Binder –** Construction of the proposed project in all areas except 350 acres where there are known significant cultural resources, application of soil binder on approximately 350 acres, and construction of approximately 18 acres of roadways (within the 350 acres)

No Project would avoid the significant un-mitigable impacts of the proposed project on cultural resources, but it would not meet the basic project objective of dust control. Since it would also not increase the vegetated area on Owens Lake or improve the habitat value of the Transition Areas, No Project is not environmentally superior to the proposed project.

The Avoidance Alternative would protect significant cultural resources, increase vegetated area on the lake, improve the habitat value of the Transition Areas, and achieve the emission reductions originally expected in the 2008 SIP. Overall, since it would protect significant cultural resources and achieve the originally expected emission reductions in the SIP, the Avoidance Alternative is environmentally superior to the originally proposed project.

The Expanded Avoidance Alternative would protect significant cultural resources as well as protect a 60-acre area identified as culturally sensitive by the Lone Pine Paiute-Shoshone. This alternative would increase vegetated area on the lake and improve the habitat value of the Transition Areas. Since it would protect significant cultural resources, the Expanded Avoidance Alternative is environmentally superior to the proposed project. However, this alternative would achieve less of the air quality control objective of the Phase 7a project, as compared to the originally proposed project and other avoidance alternatives. Therefore, overall, the Expanded Avoidance Alternative is not considered environmentally superior to the Avoidance Alternative.

The Avoidance Alternative with Soil Binder would increase vegetated area on the lake, improve the habitat value of the Transition Areas, and meet the project objective of dust control on approximately 3.1 square miles of Owens Lake identified by GBUAPCD as emissive. The Avoidance Alternative with Soil Binder would protect the majority of the significant cultural sites from excavation impacts, but the application method for binders and earthwork for access road construction would significantly impact the integrity of the resources. Pilot testing of potential soil binders would reduce the unknowns associated with this alternative. However, overall, the Avoidance Alternative with Soil Binder would have significant impacts on cultural resources and would require pilot testing to reduce the unknowns associated with impacts to cultural resources, biological resources and water quality. Therefore, based on available information, the Avoidance Alternative with Soil Binder is not environmentally superior to the Avoidance Alternative.

1.7.1 Environmentally Superior Alternative

The Avoidance Alternative would protect significant cultural resources, increase vegetated area on the lake, improve the habitat value of the Transition Areas, and achieve the emission reductions originally expected in the 2008 SIP. The Avoidance Alternative would meet the project objectives with the least impacts and, therefore, is environmentally superior to the originally proposed Phase 7a project and to the other alternatives evaluated.

1.8 GROWTH-INDUCING IMPACTS

The proposed project does not involve construction of new homes or businesses and does not include construction of new, potentially growth-inducing, infrastructure such as potable water or wastewater systems. The project will expand the existing system of DCMs on Owens Lake for the improvement of air quality. Infrastructure associated with the OLDMP does not foster population growth. Therefore, the project will not be directly or indirectly growth-inducing related to expansion of infrastructure systems.

Depending on project construction phase, the project will require approximately 50 to 150 construction workers on Owens Lake for a minimum of 18 months. It is anticipated that these workers would frequent businesses in the project area during this period. However, due to the limited number of workers required and the temporary nature of construction, the impact on economic growth is less than significant. Operation of the project will require approximately five additional workers over existing operations and maintenance staff. The impact on economic growth is less than significant.

1.9 SIGNIFICANT ENVIRONMENTAL IMPACTS FOR WHICH NO FEASIBLE MITIGATION IS AVAILABLE

Construction of the original Phase 7a project would significantly impact CRHR-eligible cultural resources located in the Phase 7a project areas. Implementation of a Phase III data recovery program for the significant cultural resources sites located in the Phase 7a DCAs is not identified as feasible mitigation for the project. Implementation of mitigation measures CR-1 to CR-6 would protect three of the known archaeological sites as well as unevaluated and inadvertently discovered cultural resources, but the portions of the CRHR-eligible sites that overlap with project construction areas in DCAs would still be significantly adversely impacted. Therefore, there is no feasible mitigation to reduce significant impacts on cultural resources for the Phase 7a Project as originally defined (3.1 square miles of dust control). Therefore, alternatives to the original Phase 7a project were reviewed. With implementation of the Avoidance Alternative and identified mitigation measures, impacts on cultural resources will be reduced to less than significant levels.

1.10 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

As described in **Section 4.4**, the Phase 7a project as originally proposed (3.1 square miles of dust control) would have significant irreversible impacts on unique cultural resources. Therefore, an alternative to the originally proposed project has been defined. With implementation of mitigation measures, the Avoidance Alternative will have less than significant impacts on cultural resources.

Construction of the project will require the use of heavy equipment, workers' vehicles, and gravel hauling trucks. The equipment and vehicles will consume nonrenewable fossil fuels for the length of construction, and during the life of the project for maintenance. The objective of the project is to implement dust control measures on Owens Lake to meet regulatory dust control requirements without increasing water commitments while maintaining existing habitat, improving aesthetics, providing safe limited public access, preserving cultural resources, and utilizing existing infrastructure and vegetation. Overall, since the project would improve environmental conditions in the area, the benefits of the project justify the use of irreplaceable resources (fossil fuels) and the irreversible environmental changes associated with the project will be less than significant.

With implementation of the Avoidance Alternative and identified mitigation measures, there will be no significant irreversible environmental changes associated with the Phase 7a project.

1.11 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

1.11.1 Gravel Cover

Gravel Cover is one of three BACM identified by GBUAPCD as approved for dust control on the lake. While approved by GBUPCD based on its expected efficacy, the land owner for the majority of the lake bed, CSLC, has indicated concern that Gravel Cover does not protect or promote the Public Trust uses and values of the lake. Notwithstanding this finding, CSLC has indicated its willingness to allow some areas of Gravel Cover to be implemented by the issuance of a lease amendment (PRC 8079.9, December 2010) for the Phase 8 project (2.03 square miles of Gravel Cover) and approval of the proposed gravel color. A lease amendment for the Phase 7a project will require additional CSLC review, including review of the proposed Gravel Cover elements.

1.11.2 Cultural Resources

Based on previously conducted and recent (2011) cultural resources investigations of Owens Lake, numerous prehistoric, historic and paleontological resources are known for the Phase 7a project sites. As discussed in **Section 4.4** of this EIR, LADWP conducted Phase II cultural resources evaluations to determine if the resources are unique (and therefore significant under CEQA). LADWP consulted with CSLC, the State Office of Historic Preservation (SHPO) and Lone Pine Paiute-Shoshone tribal representatives. As discussed in **Section 4.4**, implementation of dust control in portions of the Phase 7a project areas may be incompatible with avoidance of known cultural resources. With implementation of the Avoidance Alternative and identified mitigation measures, impacts on cultural resources will be reduced to less than significant levels.

Section 2
Introduction

The City of Los Angeles Department of Water and Power (LADWP, Department) is currently implementing the Owens Lake Dust Mitigation Program (OLDMP) on Owens Lake in order to reduce exceedances of the state and federal particulate matter (PM_{10}) air quality standards. [PM_{10} is defined as particulate matter with an aerodynamic diameter of 10 microns or less.] LADWP constructs and operates dust control measures (DCMs) on the lake in compliance with Agreements with the Great Basin Unified Air Pollution Control District (GBUAPCD) under the authority of California Health & Safety Code Sec. 42316, legal settlement agreements with GBUAPCD, lease agreements for use of state lands (administered by the California State Lands Commission (CSLC)), and other regulatory approvals.

LADWP proposes to expand the OLDMP by construction and operation of the Phase 7a Dust Control Measures project (proposed project) in response to GBUAPCD Board Order 110317-01, dated March 17, 2011 (Order 110317-01, or the Abatement Order). As originally defined, the Phase 7a project includes implementation of current Best Available Control Measures (BACM) including Gravel Cover, Shallow Flooding, and Managed Vegetation in five Dust Control Areas (DCAs), and Tillage in one DCA, over approximately 3.1 square miles of Owens Lake playa to reduce PM_{10} emissions, and the transition of 3.4 square miles of existing Shallow Flooding DCAs to a mix of BACM to conserve water. The project also includes: construction of three new turnout facilities and modification to four existing turnout facilities; irrigation and drainage systems and other infrastructure to support Shallow Flooding, Managed Vegetation and Tillage; construction of public amenities such as trails, boardwalks, and visitor outlooks; installation or reconfiguration of DCA berms; improvement of an access road; re-routing of the existing Lake Minerals Road to the new T1A-4 perimeter berm; and, construction of a new water supply pipeline.

Based on analysis conducted for the project (described in **Section 4.4**), LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) in order to reduce impacts on significant cultural resources to less than significant levels, and to reduce dust to the maximum extent feasible. Under the environmentally superior alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control.

This Environmental Impact Report (EIR) is the California Environmental Quality Act (CEQA) compliance document for the Phase 7a project. The EIR has been prepared in accordance with CEQA, Public Resources Code Section 21000 et seq., and the State CEQA Guidelines, Title 14 California Code of Regulations (CCR) Section 15000 et seq.

2.1 LEAD AGENCY

LADWP is required to act as lead agency for the EIR, pursuant to the Abatement Order and in accordance with State CEQA Guidelines Section 15367 (California Code of Regulations, 2011). LADWP is the largest municipal utility in the nation. Established more than 100 years ago, the

Department's mission is to deliver reliable, safe water and electricity supplies to some 3.8 million residents and businesses in Los Angeles. A five-member Board of Water and Power Commissioners establishes policy for LADWP. The Board members are appointed by the Mayor and confirmed by the City Council for 5-year terms. The Board is the decision-making body for the consideration and adoption of the proposed project, EIR, Mitigation Monitoring and Reporting Program (MMRP), and Findings of Fact.

2.2 RESPONSIBLE AND TRUSTEE AGENCIES

CEQA defines a "responsible agency" as a public agency, other than the lead agency, which has responsibility for carrying out or approving a project. A responsible agency typically has permitting authority or discretionary approval over some aspect of the overall project for which the lead agency is conducting CEQA review. The responsible agency relies on the lead agency's environmental document in acting on whatever aspects of the project require its approval. The responsible agency must issue its own findings regarding the feasibility of relevant mitigation measures or project alternatives that can substantially lessen or avoid significant environmental effects.

2.2.1 Great Basin Unified Air Pollution Control District

As the agency responsible for implementation of the 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (2008 SIP), the GBUAPCD is a responsible agency for this project. The GBUAPCD is one of 35 local air pollution control agencies established pursuant to Section 40002 of the California Health & Safety Code (HSC). GBUAPCD has primary responsibility for the control of air pollution from all local sources except emissions from motor vehicles, which are the responsibility of the California Air Resources Board (CARB). The United States Environmental Protection Agency (USEPA) sets limits on how much of a particular pollutant can be present in the air for any given location in the United States. Each air district is responsible for preparing, adopting, and implementing the air quality plans (State Implementation Plans, SIPs) that seek to achieve and maintain state and federal air quality standards, or to regain attainment of standards that have been exceeded. U.S. EPA must approve each SIP, and if a SIP is not acceptable, EPA can take over enforcing the Clean Air Act (CAA) in that state.

2.2.2 Regional Water Quality Control Board

As a permitting agency under the Clean Water Act and state Porter-Cologne Water Quality Control Act, the Regional Water Quality Control Board, Lahontan Region (Regional Board), is also a responsible agency for the Phase 7a project.

2.2.3 California State Lands Commission

A "trustee agency" is a public agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California. Trustee agencies include the CSLC with regard to state-owned "sovereign" lands. CSLC describes its mission as serving the people of California by providing stewardship of the lands, waterways, and resources entrusted to its care through economic development, protection, preservation, and restoration.

Since the proposed Phase 7a project involves work on sovereign lands and would require a CSLC lease amendment, CSLC is both a trustee and responsible agency. The existing OLDMP activities are carried out per the terms of General Lease – Public Agency Use, No. PRC 8079.9 authorized by CSLC on June 14, 1999 and executed July 21, 1999, and subsequent amendments.

2.2.4 California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) is also a Trustee agency. CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. Implementation of the Phase 7a project would require a Lake Bed Alteration Agreement from CDFW.

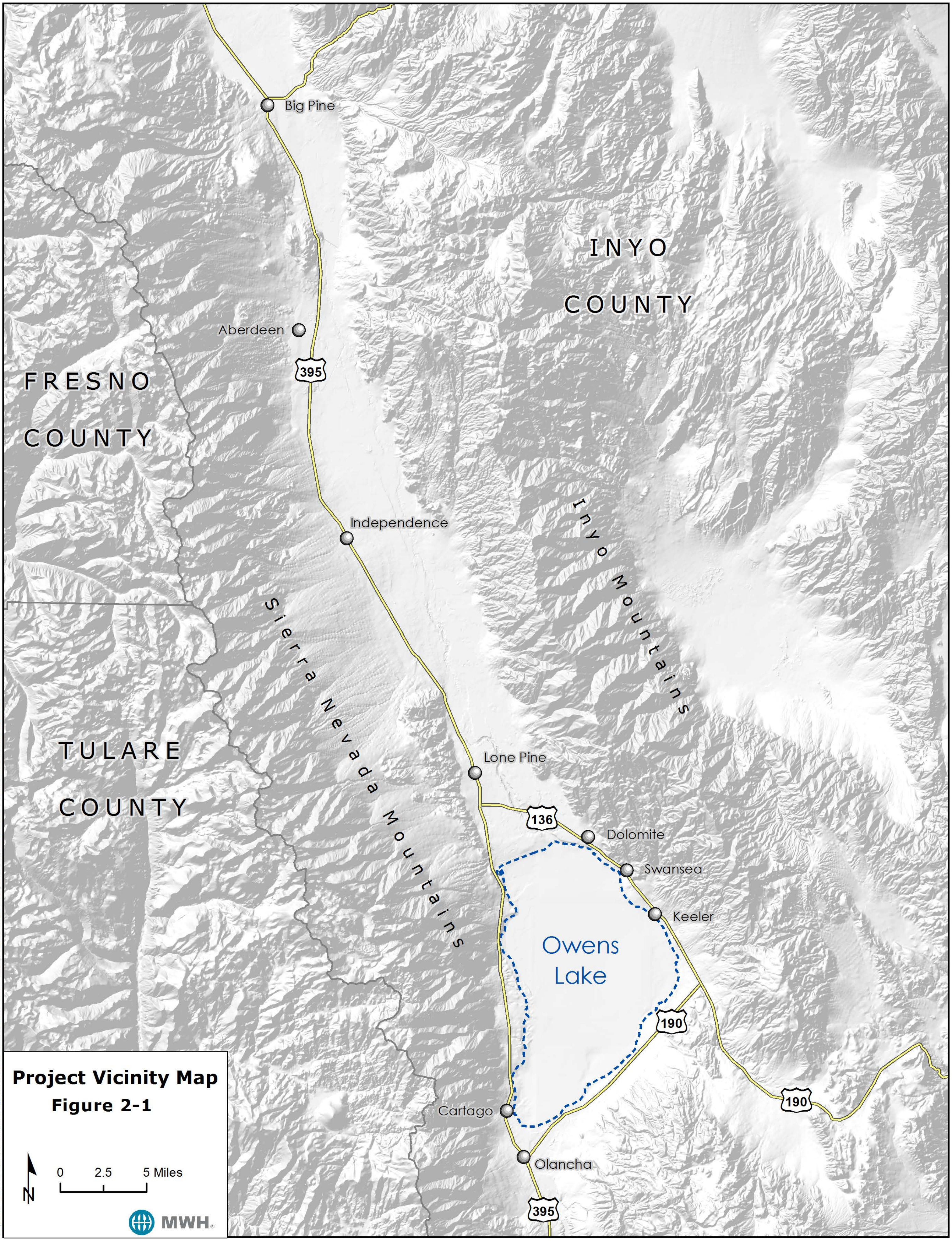
2.3 STUDY AREA DESCRIPTION

The study area for the Phase 7a project is 3.1 square miles of Owens Lake bed (currently predominantly barren playa) proposed for dust control, 3.4 square miles of existing Shallow Flooding DCAs proposed for transition to BACM Hybrid or Gravel Cover, and adjacent areas proposed for roadway improvements, turnouts and other infrastructure, and a water supply pipeline. The 110-square-mile Owens Lake is located in Inyo County, California, approximately 5 miles south of the community of Lone Pine (**Figure 2-1**) and approximately 61 miles south of the city of Bishop. Owens Lake is bounded by State Route (SR) 136 to the north and east, SR 190 to the south, and U.S. Highway (U.S.) 395 to the west. Phase 7a project areas are located as noted in **Table 2-1** and **Figure 2-2**. Other nearby communities include Dolomite to the northeast, Keeler to the east, and Cartago and Olancha to the south.

Table 2-1
Locations of Phase 7a Dust Control Areas

Dust Control Area (DCA)	**Size** (acres)	**USGS 7.5 Min Quadrangle**	**Distance to Nearest Community** (miles)	**Existing Dust Control Measure** (DCM)	**Phase 7a DCM**
Phase 7a Primary DCAs					
T1A-3	518	Vermillion Canyon	Cartago - 2.3	None	GC
T1A-4	620	Vermillion Canyon	Cartago - 3.4	None	SFL
T12-1	211	Owens Lake	Keeler - 7.1	previous M&R test site; Tillage on-going	TL
T32-1	108	Dolomite	Keeler - 4.3	previous M&R test site (removed in 2010)	MVN
T37-1	137	Lone Pine	Dolomite - 4.8	None	GC and MVN
T37-2	378	Bartlett	Dolomite - 5.9	None	SFL and MVN
Transition Areas – Existing Shallow Flooding to BACM Hybrid or Gravel Cover					
T1A-2_a	260	Olancha/Vermillion Canyon	Cartago - 1.3	SFL	BACM Hybrid (SFL, MVN)
T28N	454	Owens Lake / Dolomite	Swansea - 1.0	SFL	BACM Hybrid (SFP, SFL, MVN, GC)
T28S	300	Owens Lake	Swansea - 1.6	SFL	BACM Hybrid (SFP, SFL, MVN, GC)
T30-1	693	Dolomite	Swansea - 0.4	SFP (T30-1_a) SFL (T30-1_b)	BACM Hybrid (SFP, SFL, MVN)
T35-1	69	Lone Pine	Dolomite - 3.4	SFP	GC
T35-2	95	Lone Pine	Swansea - 3.5	SFP	GC
T36-1_b	309	Dolomite	Dolomite - 2.9	SFL	BACM Hybrid (SFP, MVN)

GC – Gravel Cover; SFL – Shallow Flooding Lateral; SFP – Shallow Flooding Pond; TL – Tillage; MVN – Managed Vegetation; M&R – Moat and Row



Project Vicinity Map
Figure 2-1

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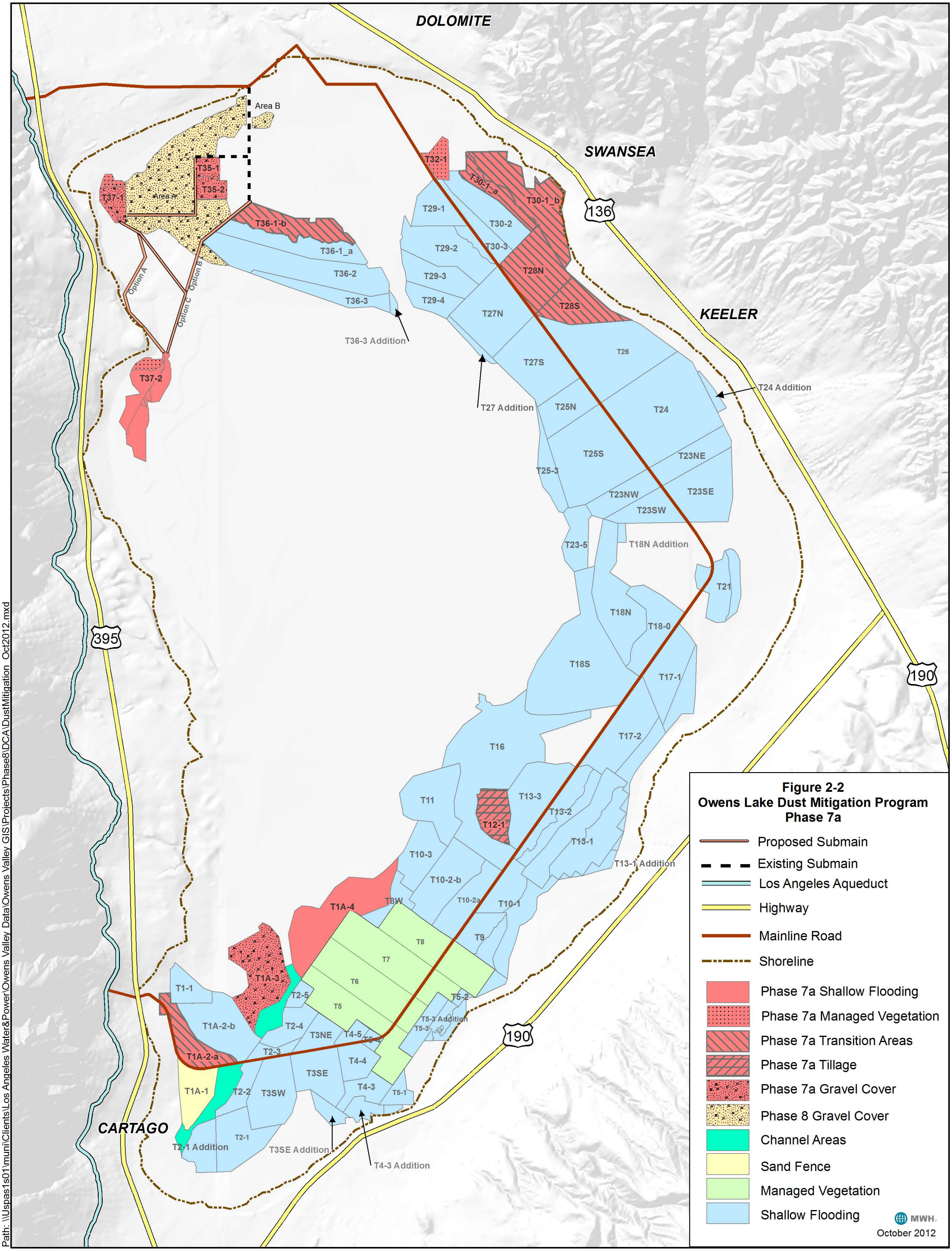

Figure 2-2
Owens Lake Dust Mitigation Program
Phase 7a

2.4 PROJECT BACKGROUND

2.4.1 History of the Dust Mitigation Program

In 1987, USEPA revised the National Ambient Air Quality Standards (NAAQS) by replacing total suspended particulates (TSP) as the indicator for particulate matter with PM_{10}. Also in 1987, the USEPA designated the Owens Valley Planning Area (an area extending from north of Independence to south of Olancha, and including Owens Lake) as nonattainment for the NAAQS for PM_{10}. The result of this designation was a plan, developed by GBUAPCD, designed to improve air quality through the reduction of PM_{10} emissions in all of the communities in the Owens Valley. The 1997 SIP and associated Board Order 070297-04 to the City of Los Angeles (City) mandated specific particulate matter controls to reduce dust emission from Owens Lake. After negotiation, the City and GBUAPCD entered into a Memorandum of Agreement (MOA) in July 1998 to mitigate dust. The 1998 MOA delineated the dust producing areas on the lake bed that needed to be controlled, specified what measures must be used to control the dust, and specified a timetable for implementation of the control measures. The MOA identified three control measures as BACM for Owens Lake: Shallow Flooding, Managed Vegetation, and Gravel Cover. The MOA called for phased implementation to permit the effectiveness of the control measures to be evaluated and modifications to be made as the control measures were being installed.

GBUAPCD relies on Section 42316 as authority for requiring the City to undertake reasonable measures, including studies, to mitigate the air quality impacts of its activities in the production, diversion, storage, or conveyance of water. Under Section 42316, the mitigation measures shall not affect the right of the City to produce, divert, store, or convey water and, except for studies and monitoring activities, the mitigation measures may only be required or amended on the basis of substantial evidence establishing that water production, diversion, storage, or conveyance by the City causes or contributes to violations of state or federal ambient air quality standards. The 1998 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (1998 SIP), dated November 16, 1998 and the 2003 Revision to the Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (2003 SIP), dated November 13, 2003, set forth a series of measures and actions to be taken by the City to reduce particulate emissions from the Owens Lake bed.

The first phase of dust control implemented by LADWP was Shallow Flooding – which involved flooding the area to be controlled until it is either inundated with a few inches of water or the soil becomes thoroughly saturated. The revised SIP in 2003 called for LADWP to implement DCMs on 29.8 square miles of the Owens lake bed by December 31, 2006. The 2008 SIP revised the 2003 SIP to add 15.1 square miles (9,664 acres; including 1.9 square miles of study areas) of additional DCMs on Owens Lake bed. As part of Phase 7, LADWP constructed 10.1 square miles of dust control by the compliance deadline of October 1, 2010. The 2008 SIP's attainment strategy provides that control of 43 square miles of the Owens Lake bed will result in the Owens Valley Planning Area (OVPA) achieving attainment of the PM_{10} NAAQS by 2017.

As a result of delays outside LADWP's control, LADWP and GBUAPCD entered into an Abatement Order that led to the Phase 7a Project. The Abatement Order called for installation of dust control on approximately 3.1 square miles on areas identified in the Order as "Phase 7a areas." LADWP has the discretion to select BACM, or conduct testing of new or modified BACM, on up to one-third (0.33) square mile of the Phase 7a study area, specifically in DCA T12-1. The Abatement Order also states, that in order to decrease water use on Owens Lake, approximately 3.0 square miles of existing Shallow Flood controls may be transitioned to any combination of BACM in order to provide a water supply for new dust controls. The Abatement Order expressly acknowledges that during construction of the Transition Areas, the Transition Areas may not be compliant at all times with the BACM requirements in Governing Board Order No. 080128-01 (Board Order 080128-01) and, thus, LADWP is required to take "Reasonable Precautions" to control emissions to the extent practicable during construction of the Transition Areas pursuant to an approved Dust Control Plan. Implementation of the environmentally superior alternative (Avoidance Alternative, **Section 5**) will result in the installation of dust control on approximately 3.1 additional square miles of the lake, less approximately 350 acres that will be excluded to preserve cultural resources; the transition of 3.4 square miles of existing Shallow Flooding DCAs to a mix of BACM; construction of turnout facilities and other infrastructure; construction of public amenities such as trails, boardwalks, and visitor outlooks; installation or reconfiguration of DCA berms; improvement of an access road; re-routing of the existing Lake Minerals Road to the new T1A-4 perimeter berm; and, construction of a new water supply pipeline. The Abatement Order can be modified to address any necessary changes to the project that was anticipated in the Order.

Also, in order to secure a variance to cover the delays for the Phase 7 project that were outside LADWP's control (which also led to the Phase 7a project, discussed above), GBUAPCD required LADWP to install dust controls on an additional 2.03 square miles of Owens Lake. This project, known as Phase 8, consists of 2.03 square miles of Gravel Cover, and was not required as part of the 2008 SIP attainment strategy. Therefore, LADWP has committed to controlling dust on approximately 45 square miles of Owens Lake, 2 square miles more than was required in the 2008 SIP for the OVPA to reach attainment.

2.4.2 Background of the Phase 7a Project

The sequence of GBUAPCD, LADWP and CSLC actions relevant to Phase 7a is as follows:

- **January 2008 –** Governing Board Order No. 080128-01 requires the City to implement BACM in 13.2 square miles of Owens Lake; the area is identified as Phase 7. Under Phase 7, seven parcels on 3.5 square miles of Owens Lake were proposed for the implementation of Moat and Row DCM.

- **February 2008 –** To analyze the environmental effects of the 2008 SIP (GBUAPCD, 2008a), the GBUAPCD prepared and certified a Final Subsequent Environmental Impact Report (2008 SIP FSEIR) (GBUAPCD, 2008b) on February 1, 2008 for inclusion of 15.1 square miles of dust control on the Owens Lake bed. As noted above, approximately 3.5 square miles of this area was proposed for construction of Moat and Row DCM.

- **September 2009 –** LADWP prepared and certified a Final Supplemental EIR for the Owens Lake Revised Moat and Row DCMs in 2009 (LADWP, 2009) which tiered off the 2008 SIP FSEIR to address changes to the design and operation and maintenance plan for the Moat and Row DCMs.

- **September 2009** – Variance Order GB09-06 provided the City of Los Angeles with additional time (from October 1, 2009 to October 1, 2010) to implement PM_{10} controls in 3.1 square miles of the 13.2 square miles identified in Board Order 080128-01. [These 3.1 square miles are identified as Phase 7a.]

- **December 2009** - A lease from CSLC for one of the seven Moat and Row parcels (T1A-1) was granted in December 2009 for the installation of sand fences on approximately 0.4 square miles; construction of the sand fences was completed in October 2010.

- **April 2010 –** CSLC denied the City's application for a lease for the proposed Moat and Row dust control on the 3.1 square miles of Phase 7a.

- **May 2010 –** LADWP proposed to amend the project description for the Phase 7 Moat and Row project to include Tillage on a portion of the project area as an interim DCM. Tillage on 3.1 square miles (within six parcels) was approved by GBUAPCD, but because of challenges related to soil conditions in five of the six targeted parcels that were outside of LADWP's control, implementation was not completed. An Addendum to the Moat and Row SEIR prepared by LADWP in May 2010 addressed the change in the project description to add Tillage as an interim DCM. Tillage in T12-1 was completed on November 14, 2012.

- **October 2010 –** The Air Pollution Control Officer issued a Notice of Violation (NOV number 471) because the controls were not implemented in the Phase 7a areas by the October 1, 2010 deadline identified in GB09-06.

- **December 2010 –** Order 101206-01 required the City to implement BACM on 2.03 square miles in an area identified as Phase 8. [Approximately 0.65 square miles of the Phase 8 areas overlaps with the 15.1 square miles of DCMs described in the 2008 SIP.] The Phase 8 project was an additional requirement of GB09-06 and was not contemplated in the 2008 SIP. The Phase 8 project, which consists of 2.03 square miles of Gravel Cover, was completed by the November 2012 deadline.

- **March 2011 –** GBUAPCD Governing Board Order 110317-01 (the Abatement Order) required implementation of BACM on the 3.1 square miles of Phase 7a and on approximately 3.0 square miles of Transition Areas. Except for the T12-1 BACM test area (tillage test area), the Abatement Order requires BACM to be installed and operational by December 31, 2013. Phase 7a areas controlled by Managed Vegetation are to be fully-compliant by December 31, 2015.

- **October 2011** - LADWP Board of Commissioners passed a Resolution (012 097) finding that due to adverse weather conditions that kept the soil too saturated to conduct tilling in DCA T12-1, and undefined critical testing standards, the deadline in the Abatement Order to install an approved BACM on the DCA T12-1 may not be feasible.

- **February 2012** – LADWP Board of Commissioners passed a Resolution (012 170) finding that due to the unanticipated discovery of extensive historical and unique archaeological resources in the Phase 7a project area, specifically DCA T37-1 and DCA T37-2, that are eligible for inclusion in the California Register of Historical Resources (CRHR), the deadline in the Abatement Order to install BACM on these areas may not be feasible.

- **April 2012** - LADWP Board of Commissioners passed a Resolution (012 210) finding that due to the additional unanticipated discovery of extensive historical and unique archaeological resources in the Phase 7a area, specifically DCA T1A-3 and DCA T32-1, that are eligible for inclusion in the CRHR, completion of the EIR and finalization of the design of portions of the Phase 7a project will be delayed, such that the deadline in the Abatement Order to install BACM in these areas may not be feasible.

- **January 2013** - LADWP Board of Commissioners passed a Resolution finding that due to the unexpected discovery of extensive historical and archaeological resources in the Phase 7a area and the mandatory requirement under CEQA that LADWP evaluate the potential impacts of the Phase 7a project on these resources and then act accordingly, the December 31, 2013 deadline in the Order requiring installation of BACM of Phase 7a cannot be met.

2.5 PROJECT OBJECTIVES

The objective of the Phase 7a project is to implement dust control measures on Owens Lake to meet regulatory dust control requirements without increasing water commitments while maintaining existing habitat, improving aesthetics, providing safe limited public access, preserving cultural resources, and utilizing existing infrastructure and vegetation.

2.6 CEQA PROCESS

2.6.1 Notice of Preparation

In May 2011 a CEQA Initial Study was prepared by LADWP based on State CEQA Guidelines Appendix G, to determine whether construction and operation of the proposed project would result in significant effects on the environment. Since potentially significant effects were identified, LADWP determined that an EIR was needed to analyze those effects. A Notice of Preparation (NOP) of the EIR, along with the Initial Study, was prepared and filed with the State Clearinghouse on May 23, 2011. The NOP/Initial Study was distributed to 39 entities, including potential responsible and trustee agencies, and interested organizations and individuals including 13 Native American tribal representatives. An additional 23 interested parties received a Notice of Availability of the NOP/Initial Study. Reference copies were available at LADWP offices in Los Angeles and Bishop, at four libraries in Inyo County, and via a link on the LADWP website.

A copy of the NOP/Initial Study is included in **Appendix A**. Comments on the scope and content of the EIR were received on the NOP from five regulatory agencies (**Appendix B**). Information included in this EIR responds to the comments raised at the public meetings and in the comment letters on the NOP.

2.6.2 Native American Consultation

The first project meeting held was a Native American consultation meeting for both Phase 8 and Phase 7a. Native American representatives received notification of the meeting via letters mailed on March 25, 2011. The meeting was held on April 11, 2011 at the LADWP office in Keeler, California. Five tribal representatives were present at the meeting, which detailed proposed archaeological surveys and excavations for Phases 7a and 8. Representatives from the Lone Pine Paiute-Shoshone Reservation expressed a desire to monitor during archaeological excavations and construction. LADWP has been notifying Ms. Kathy Bancroft of the Lone Pine Paiute-Shoshone Reservation by phone and email of the on-going cultural resources investigations on both Phase 8 and Phase 7a project sites. Tribal monitors have been present during all archaeological excavations and construction.

A letter dated February 3, 2012 was sent to LADWP (addressed to Mr. Ron Nichols, General Manager) from Ms. Mary Wuester, Acting Chairperson of the Lone Pine Paiute-Shoshone Reservation. Ms. Wuester summarized the concerns of the tribe regarding determination of significance of cultural material, communication related to ground disturbance and logistics involved with construction monitoring, and the tribe's position that avoidance of cultural resources is the best mitigation (see **Section 4.4** for additional information).

LADWP staff met with the Lone Pine Paiute-Shoshone on February 28, 2012 to present preliminary findings from the Phase II archaeological investigation. The tribe recommended avoidance of cultural resources. On March 28, 2012, LADWP staff and project archaeologists from Garcia and Associates (GANDA) conducted a presentation of initial field work results from the Phase II archaeological investigation. Representatives from GBUAPCD and the Lone Pine Paiute-Shoshone attended. Draft sections of the Phase II report were provided to Ms. Bancroft on May 31, 2012 and LADWP hosted bi-weekly conference calls in June to obtain feedback from the tribe. LADWP received comments on the draft Phase II report from Ms. Bancroft on June 25, 2012, and a final version of the report was submitted to the Lone Pine Paiute-Shoshone on August 20, 2012.

A Native American consultation meeting was held on June 28, 2012 at the LADWP office in Keeler, California. Two tribal representatives were present in Keeler, one person attended via telephone conference, and one person (Ms. Bancroft) attended by videoconference from LADWP offices in Los Angeles. The focus of the meeting was the presence of resources recommended as eligible for the California Register of Historic Resources (CRHR) in Phase 7a DCAs. The Native American Heritage Commission (NAHC) was notified of the meeting (letter dated June 5, 2012) and invited to attend. The draft Phase II cultural resources report was also made available to the NAHC.

2.6.3 Public Meetings

A public scoping meeting for the Phase 7a project was held on June 7, 2011 at the LADWP office in Keeler, California. Notice of the meeting was provided in the NOP and the Notice of Availability of the NOP. Additionally, a notice of the meeting was published in the Inyo Register on May 26, 2011, and in the Mammoth Times on May 27, 2011. Approximately 10 representatives of regulatory agencies, local industry, Native American tribes and members of the public attended the meeting. Comments received focused on clarification of the project description (including identification of the Transition Areas, type of gravel proposed for use, plant species to be used for Managed Vegetation), cultural resources, biological resources and the schedule for both Phase 7a and Phase 8.

2.6.4 Changes to the Project Description since Release of the NOP

The description of the project included in the May 2011 Initial Study (**Appendix A**) included:

- Conversion of approximately 3 to 4 square miles of existing Shallow Flooding to a hybrid of BACM including Managed Vegetation, Gravel Cover and Shallow Flooding (Transition Areas). The 3 to 4 square miles of Transition Areas will be selected from the following 6 square miles of existing Shallow Flooding areas: T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b

Since May 2011, design of the project has progressed. The Transition Areas have been specifically identified, and the full 6 square miles of Shallow Flooding area is no longer under consideration for the Phase 7a project. Therefore, additional details are presented in **Section 3**, Project Description, that update the information previously presented.

Also, a gravel conveyor from the LADWP shale borrow pit or the Dolomite mine to the lake is not currently proposed. Analysis of construction and operation of a conveyor across State Route 136 is therefore not included in this EIR.

2.6.5 Intended Uses of the EIR

The Phase 7a project to install, operate and maintain approved DCMs in the Phase 7a project areas is based on the 2008 SIP certified by GBUAPCD and CARB. Once implemented, the project will also satisfy the requirements set forth in GBUAPCD Board Order 080128-01 and the Abatement Order. Permits and approvals from other agencies are anticipated to include:

- A lease amendment for use of state lands will be required from the CSLC prior to project construction.
- Consistent with the previous DCMs installed on Owens Lake, a Lakebed Alteration Agreement per Section 1602 of the Fish and Game Code will be sought from the CDFW.
- LADWP will submit a request for an amendment to existing Clean Water Act Section 404 permit SPL-2008-00582-BAH from the U.S. Army Corps of Engineers for Phase 7 to include construction, operations, and maintenance associated with Phase 7a.
- Construction of the Phase 7a project will be completed in compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES NO. CAS000002). Per the General Permit, a Storm Water

Pollution Prevention Plan (SWPPP) incorporating best management practices (BMPs) for erosion control will be developed and implemented during project construction.

- Discharge of water to the Lake for dust control is currently permitted by the Lahontan Regional Board through Waste Discharge Requirements (WDR) for the Southern Zones Dust Control Project (Board Order No. R6V-2006-0036). The Regional Board has determined that implementation of the Phase 7a project does not warrant a revision or amendment to the existing WDR (J. Zimmerman, P.G., Regional Board, pers. comm., 2011). Implementation and operation of the Phase 7a project will be done in conformance with the existing permit.
- Use of the SR 136 right-of-way for gravel transport will require approval from Bureau of Land Management (BLM) and an encroachment permit from Caltrans. Caltrans encroachment permits will also be obtained for access roadways, Dirty Socks Road and other roadways as relevant. The permits address access, maintenance, legal sized load restrictions and traffic control (i.e., Traffic Work Safety Plan).
- A permit or non-objection letter from Inyo County for the maintenance of the Highway 395/access road will be sought.
- Relevant archaeological investigation and/or excavation permits will be obtained from the CSLC.
- Modifications to the Abatement Order will be required to implement the adopted Phase 7a project.
- Modifications to other Board Orders may possibly be required to implement the adopted Phase 7a project.
- Additionally, installation of the fuel tank at the construction office to serve the haul trucks will require compliance with:
  1) Permit to Operate (1316-00-06) – An air quality permit from GBUAPCD related to vapor recovery.
  2) Certified Unified Program Agency (CUPA) Facility Permit – A hazardous material/waste permit and associated contingency and business plan from the Inyo County Department of Environmental Health Services.
  3) Spill Prevention Control and Countermeasure (SPCC) Plan – For aboveground oil tanks of 1,320 gallons or more, and for fuel trucks when fuel will be left in the truck overnight. The Plan is filed with the Inyo County Department of Environmental Health Services.

2.7 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

CEQA Guidelines Section 15123 requires that EIRs contain a discussion of areas of known controversy and issues to be resolved.

2.7.1 Gravel Cover

Gravel Cover is one of three BACM identified by GBUAPCD as approved for dust control on the lake. While approved by GBUPCD based on its expected efficacy, the land owner for the majority of the lake bed, CSLC, has indicated concern that Gravel Cover does not protect or promote the Public Trust uses and values of the lake. Notwithstanding this finding, CSLC has indicated its willingness to allow some areas of Gravel Cover to be implemented by the issuance of a lease amendment (PRC 8079.9, December 2010) for the Phase 8 project (2.03 square miles of Gravel Cover) and approval of the proposed gravel color (C. Fossum, pers. comm., 2011). However, the Phase 8 lease agreement notes that there is no assurance that future use of Gravel Cover will be allowed (Tenth Amendment of Lease PRC 8079.9, section 2(k)). Therefore, a lease amendment for the Phase 7a project will require additional CSLC review, including review of the proposed Gravel Cover elements.

2.7.2 Cultural Resources

Based on previously conducted and recent (2011) cultural resources investigations of Owens Lake, numerous prehistoric, historic and paleontological resources are known for the Phase 7a project sites. As discussed in **Section 4.4** of this EIR, LADWP conducted Phase II cultural resources evaluations to determine if the resources are unique (and therefore significant under CEQA). LADWP consulted with CSLC, the State Office of Historic Preservation (SHPO) and Lone Pine Paiute-Shoshone tribal representatives. As discussed in **Section 4.4**, implementation of dust control in portions of the Phase 7a project areas may be incompatible with avoidance of known cultural resources.

Section 3
Project Description

3.1 PROJECT DESCRIPTION

The Phase 7a Project consists of 3.1 square miles of dust control in six DCAs and 3.4 square miles of transitioned dust controls in seven existing DCAs for a total project area of 6.5 square miles (**Figure 2-2**). LADWP will implement current BACM including Gravel Cover, Shallow Flooding, and Managed Vegetation. DCA T12-1 is the site of a 3-year Tillage BACM test. The Phase 7a project components are:

- Shallow Flooding in T1A-4 and a portion of T37-2
- Managed Vegetation in T32-1 and portions of T37-1 and T37-2
- Gravel Cover in T1A-3 and a portion of T37-1
- Tillage BACM test in T12-1

Water demand related to implementation of BACM on the six primary Phase 7a DCAs will be balanced with water conservation measures at seven existing DCAs, including:

- Conversion of approximately 3.2 square miles of existing Shallow Flooding to a hybrid of BACM including Managed Vegetation, Gravel Cover and Shallow Flooding (Transition Areas). The Transition Areas are: T1A-2_a, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b.

- Conversion of existing Shallow Flooding areas T35-1 and T35-2 to Gravel Cover.

The project also includes: construction of three new turnout facilities and modification to four existing turnout facilities; irrigation and drainage systems and other infrastructure to support Shallow Flooding, Managed Vegetation and Tillage; construction of public amenities such as trails, boardwalks, and visitor outlooks; installation or reconfiguration of DCA berms; improvement of an access road; re-routing of the existing Lake Minerals Road to the new T1A-4 perimeter berm; and, construction of a new water supply pipeline.

Proposed DCMs on the Phase 7a DCAs are summarized in **Table 3-1** and detailed below. The acreages presented are target values based on irrigation system design. Actual acreages of each DCM may vary based on field conditions. For example, in Managed Vegetation areas, water supply and seeding and/or planting may result in variable percent cover in different parts of the DCAs. Site-specific soil and drainage conditions may affect the success of vegetation efforts. However, saturation of surface soils in areas without sufficient vegetative cover will ensure that overall dust reduction efficiencies are met.

The revised (2011) definition for Managed Vegetation BACM requires that any new Managed Vegetation areas shall be established to have the same vegetation cover as the existing, proven-effective Managed Vegetation area. The proposed compliance prescription requires a blend of minimum vegetation covers that mimic the cover distribution on the existing site. Although an overall average vegetation cover of 37 percent is required, the cover at any point can vary significantly from the average. Satellite imagery and ground-truthing are used to develop a map that shows percent vegetation cover on each acre of the area. These covers are then grouped into "bins" that take into account the size of an area and the average cover over that area. For example, although the overall average must be at least 37 percent, 95 percent of any mix of 100-acre blocks must have more than 5 percent cover, 90 percent must have at least 10 percent cover and 77 percent must have at least than 20 percent cover (GBUAPCD, 2011).

Note also that based on analysis conducted for the project (described in **Section 4.4**), LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) to reduce impacts on significant cultural resources to less than significant levels, and to reduce dust to the maximum extent feasible. Under the environmentally superior alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. **Table 5-2** provides a Phase 7a Avoidance Alternative DCM summary.

3.1.1 Shallow Flooding

3.1.1.1 Shallow Flooding Description

This DCM consists of releasing fresh and/or recycled water into a DCA and allowing it to spread, wet the surface, and thereby suppress windborne dust during the dust season (October 1st to June 30th). In order to meet the requirements for dust control for Shallow Flooding per the 2008 SIP (generally 99 percent dust control efficiency standard), generally 75 percent of the surface must be wet or have saturated soil. [Note that minimum dust control efficiencies of less than 99 percent (with lower percentages of areal wetness cover) apply in the Supplemental Dust Control Areas; Figure 5.7 of the 2008 SIP (GBUAPCD, 2008a).] The coverage requirement for the 99 percent dust control areas can be reduced progressively during the spring shoulder season (May 16th to June 30th); 70 percent areal wetness cover from May 16th to May 31st; 65 percent areal wetness cover from June 1st to June 15th; and 60 percent areal wetness cover from June 15th through June 30th. The fall shoulder season is October 1st to October 15th; full levels of dust control are not required until October 16th. The performance requirements for Shallow Flooding BACM are set forth in detail in the 2008 SIP (GBUAPCD, 2008a).

As noted in **Table 3-1**, the two types of Shallow Flooding are Lateral Shallow Flood and Pond Shallow Flood. Areas with Lateral Shallow Flood will have water applied through sprinklers along lateral pipes served by submains from the main line. Applied water will flow down–slope and pond. The area will be maintained such that applied water spreads out, ponding or saturating at least 75 percent of the land surface. Lateral Shallow Flood will result in shallow-ponds (1 to 6 inches deep), deeper ponds (1 to 2 feet deep), saturated soil surfaces and unsaturated areas.

Table 3-1
Original Phase 7a Dust Control Areas

DCA		Shallow Flooding (SF) (acres)			Managed Vegetation (MV) (acres)			Tillage (acres)	Gravel Cover (acres)	Total (acres)
		Pond Shallow Flooding	Lateral Shallow Flooding	Total SF	Seeded Shrub/Dry Meadow	Seeded Alkali Meadow	Total MV			
Primary 7a DCAs	T1A-3								518	518
	T1A-4		620	620						620
	T12-1							211		211
	T32-1				80 - 91	14 - 17	108			108
	T37-1				39 - 43		43		94	137
	T37-2		310	310*	5 - 10	18 - 28	38			378**
Transition Areas	T1A-2_a		72	72		169 - 188	188			260
	T28N	58	96	154	39 - 42	144 - 154	196		104	454
	T28S	80	105	185	12 - 14	36 - 39	53		62	300
	T30-1	204	66	270	72 - 77	325 - 346	423			693
	T36-1_b	5		5	23 - 25	260 - 279	304			309
	T35-1								69	69
	T35-2								95	95

Notes: Gray shading indicates primary Phase 7a DCAs. Remaining DCAs are currently Shallow Flooding areas proposed as Transition Areas. Acreage numbers represent the total area per DCA where irrigation systems will be installed, including additional project features such as berms, pump stations, turnouts, trails, and other facilities. Managed Vegetation acreage ranges reflect areas that will be seeded. Actual acreage of vegetation will vary due to site-specific soil and drainage conditions.

* 50 acres are Shallow Flooding Transition Zone - anticipated to be vegetated or partially vegetated.
** Total includes areas that are not anticipated to be altered by project construction.

Areas of Pond Shallow Flooding will be similar to the existing Shallow Flooding DCAs on the lake. Depending on topography and water level fluctuations, Pond Shallow Flooding will include ponded water as well as islands. The up-gradient edges of the ponds are typically relatively shallow, with some areas adjacent to down-slope containment berms being a few feet deep. Pond Shallow Flooding is proposed for T28N, T28S, T30-1 and T36-1_b.

Lateral Shallow Flooding is proposed for T1A-4 (**Figure 3-1**), and most of T37-2 (the portion where it is anticipated that vegetation cannot be established) (**Figure 3-2**). Located in the southern portion of the lake adjacent to the existing Managed Vegetation areas (T5 through T8), T1A-4 occupies approximately 620 acres. Area T37-2 is located on the western edge of the lake, west of the brine pool and occupies approximately 378 acres. The majority of T37-2 will be Shallow Flooding with areas of Managed Vegetation in the northern part of the DCA. In addition to the 10 acres to be seeded with shrub dominated plant species, another 28 acres plus 50 acres of the Shallow Flooding area (Shallow Flooding Transition Zone) will be seeded with alkali meadow plant species. The actual acreage of the DCA where vegetation will establish will depend on site conditions. After the initial 2-year seeding period, areas where vegetation does not establish, and where the dust control criteria are not met, will be operated as Shallow Flooding.

A lateral Shallow Flooding network for T1A-4 will include two 18- to 24-inch-diameter buried pipelines (mainlines) that will supply water to the lateral submains (4- to 12-inch-diameter buried pipelines), which will be spaced up to 1,400 feet apart. Submain pipes supplying water to the DCAs will be high density polyethylene (HDPE). The network includes a modified whipline array (either buried or above grade HDPE), spaced approximately 80 feet apart and with a length of up to 700 feet. The whipline array includes sprinkler heads spaced approximately 80 feet apart. Laterals up to 4,000 feet in length will have risers with drains at the end. Lateral valves will be placed at each intersection with the mainline. Flush lines will be incorporated for lateral and whipline drainage. The flush system will enable: water recycling to another DCA, emptying of the piping system to prevent damage from freezing, and sediment removal. A small pump station (two variable speed 50 HP pumps) will be located at the lowest point to drain the system. Drain water will most likely be recycled within T1A-4. A second supply alternative to T1A-4, a single 24-inch-diameter mainline connected to the zonal mainline near the T1A-1 turnout, will also be evaluated.

The components of the lateral Shallow Flooding network for T37-2 are similar to the Shallow Flooding design for T1A-4, with the exception of spacing and installation. The lateral submains will be spaced up to 1,000 feet apart. The whiplines in T37-2 will be up to 500 feet long and spacing will be up to 60 feet. Based on soil conditions in this DCA, the irrigation system may be installed above ground.

Turnout Facilities. Water to the lateral Shallow Flooding will be distributed to the DCAs via area turnouts. Turnouts consist of above grade piping, pressure reducing valves (PRV), control valves (CV), magnetic flow meters (or flow elements, FE), isolation valves, combination air-vacuum release valves (CARV), pressure indicating transmitters (PIT), filtering system control valve filters, electric equipment, and monitoring and automatic control instrumentation. The turnouts are typically constructed on raised earthen pads adjacent to the DCAs. The turnouts include mechanical equipment and electrical equipment on concrete pads; **Figure 3-3** is an existing turnout located on the lake bed. Three new turnouts (T7A, T12-1 and T37-2) are planned; four existing turnouts will be expanded (T1A-2A, T28N/T28S, T35A and T36-1B). The turnouts will be connected to the zonal mainline that is a continuous loop connecting to the Los Angeles Aqueduct (LAA) at the north and south ends of the OLDMP area.

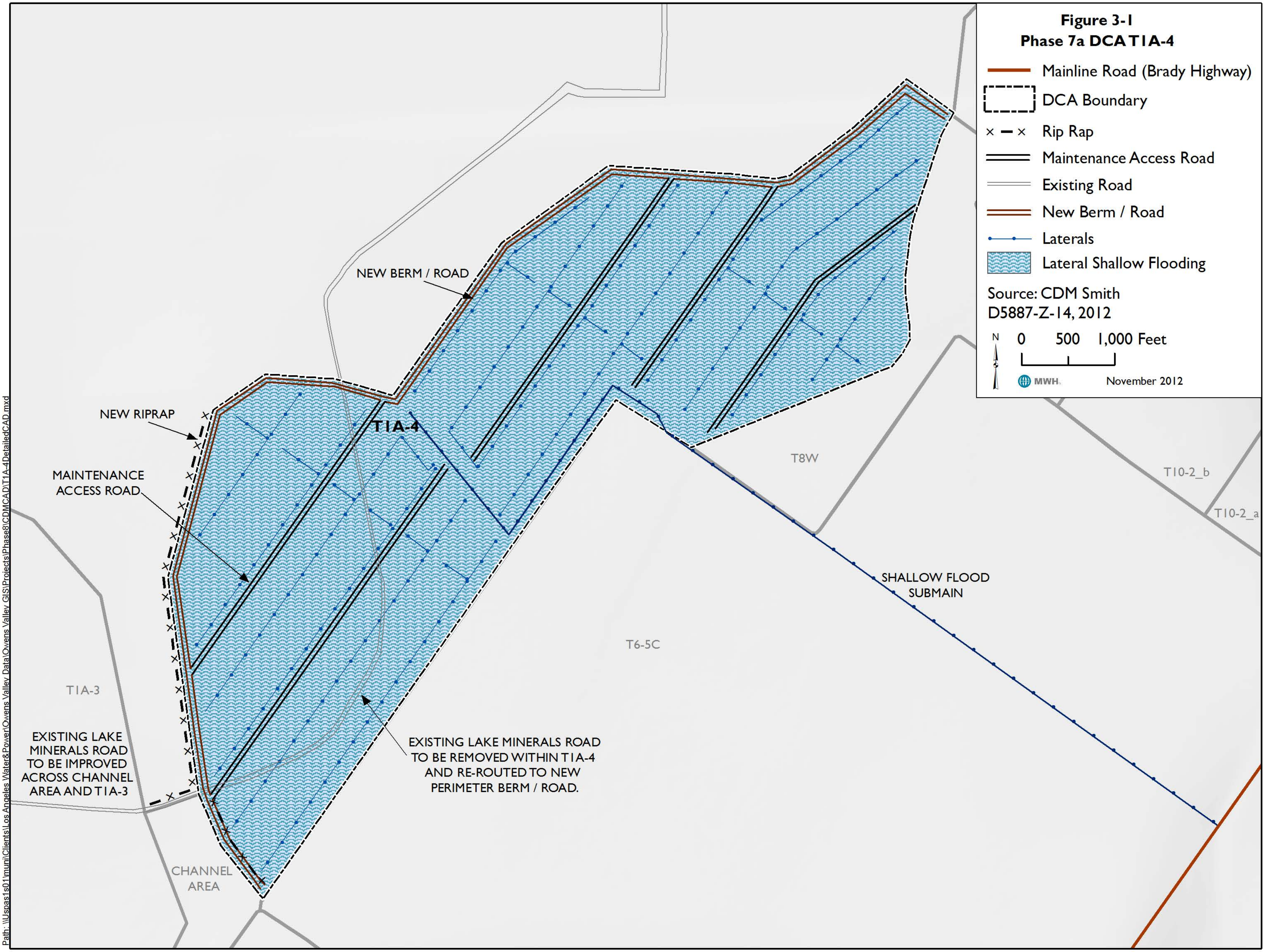

Figure 3-1
Phase 7a DCA T1A-4

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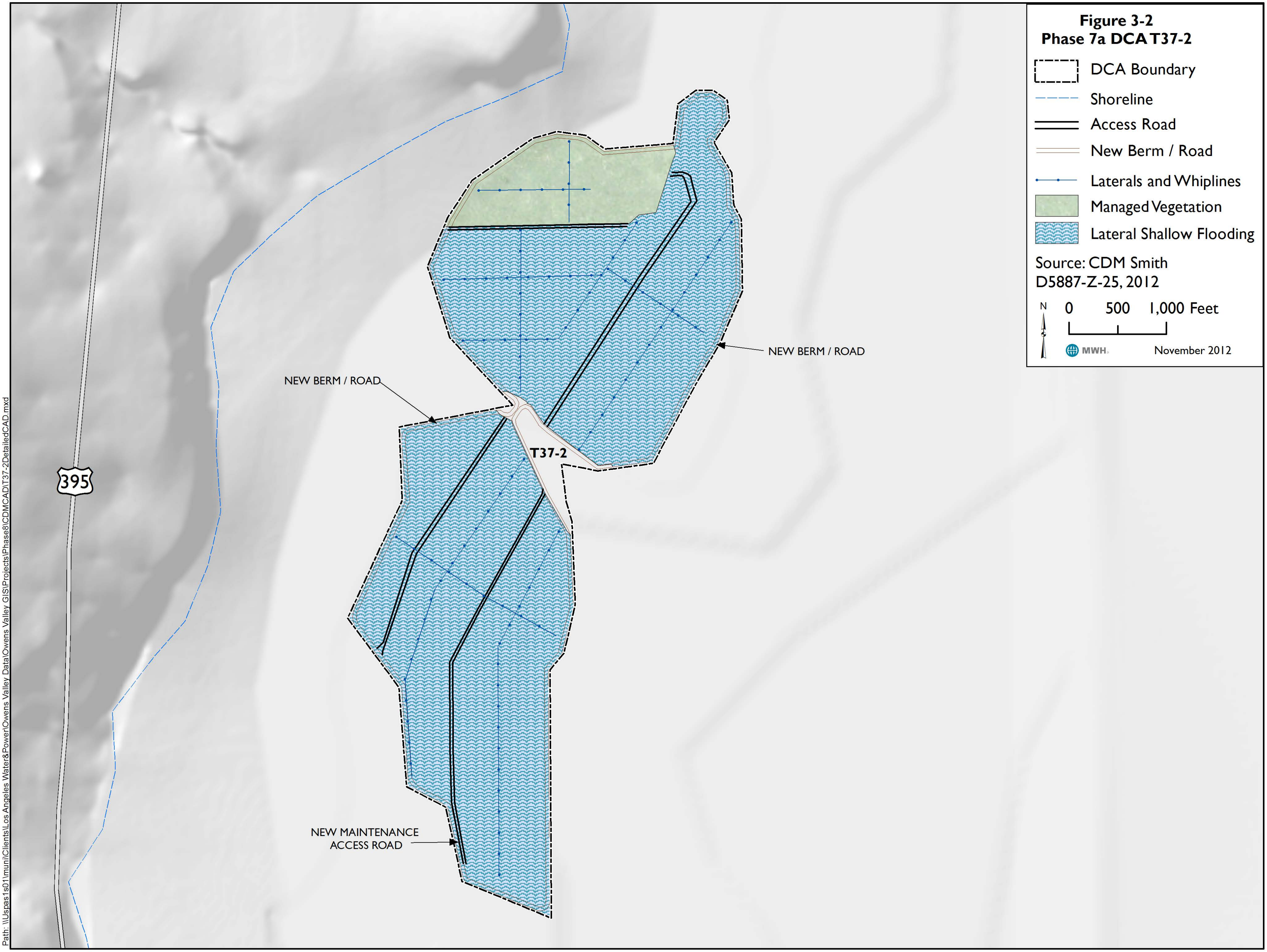

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Figure 3-3
Existing Turnout on Owens Lake

Source: LADWP, November 2010 (T1A-2)

Water enters a Shallow Flooding area through PRVs, located at the turnouts. The turnouts distribute freshwater to the DCAs via area Shallow Flooding submains. The PRVs at the turnouts function to lower the zonal mainline pressure to the submain operating pressure for the shallow flood submains. The PRVs at the laterals function to control and further lower the Shallow Flooding submain pressure to the lateral operating maximum pressure.

The PRVs at the turnouts are hydraulically controlled valves. These valves operate by using pilot water (supplied by the freshwater from the submains) to control the valves. The freshwater from the submains contains large quantities of sediments. To prevent the PRVs from clogging, the pilot water is diverted through a separate pilot water filtration system. Tailwater and drainwater pump stations collect and recirculate flow within a given shallow flood area and submain to optimize water use within the irrigated zone and minimize loss of water offsite.

New Supply Pipeline. A 30-inch HDPE water supply submain (or equivalent) will transect the Phase 8 area to provide water from the northwest corner of T35-1 to T37-1. To provide water to T37-2, the pipeline will continue from T37-1, or a new pipeline will be installed from T36 south to T37-2. The options considered for water supply to T37-2 are depicted in Figure 2-2 (Options

A, B, and C). Based on soil conditions and to avoid sensitive resources, Option A has been excluded.

3.1.1.2 Shallow Flooding Construction

Shallow Flood construction activities will include:

- Installation of new turnouts
- Land leveling
- Installation of berms
- Pipe and electrical cable excavation
- Placement of irrigation pipes and sprinklers

To the maximum extent feasible, earthwork in each area will be balanced onsite. As suitable, onsite material will be used to build berms and turnout earthen pads. Excess soil from one DCA may be relocated to other areas of the lake for reuse. In some cases, suitable material may be disked and spread to reduce moisture content before placement. Sand bedding, base course and riprap will be imported to the DCAs. It is anticipated that this material will be obtained from local gravel production operations such as the LADWP State Route 136 Shale borrow pit (LADWP Shale borrow pit) and the Federal White Aggregate (F.W. Aggregate) Dolomite mine. Final gravel source selection will be made by the Construction Contractor.

Land leveling will be performed based on existing topography to achieve 75 percent surface cover of water and in consideration of excavation of suitable material for berm and turnout pad construction. Grading of Shallow Flooding areas will be required for construction of perimeter berms and maintenance roads. Based on soil conditions in T37-2, the irrigation system may be installed above ground, which would reduce required earthwork. It is anticipated that berm heights will vary from 3 to 5 feet or less and the turnout earthen pads may range up to 5 to 8 feet in height to protect facilities from localized flooding. Over excavation will be done underneath proposed earthen berm alignments to remove any unsuitable material. Geotextile will then be placed directly on the existing surface to create a firm base. The earthen berm will be constructed over the geotextile fabric (HDPE, minimum of 40 mils thick). Earthen berm side slopes will have a 3:1 slope and be armored with a 4-inch thick layer of 3-inch-diameter gravel.

3.1.2 Managed Vegetation

3.1.2.1 Managed Vegetation Description

Vegetation on the playa reduces sand motion and soil erosion. Aboveground cover acts as a wind break, lowering the velocity at the playa surface. Under Phase 7a, Managed Vegetation is proposed for approximately 108 acres of T32-1 (**Figure 3-4**), the northern and western perimeters of T37-1 (approximately 43 acres) (**Figure 3-5**), and up to 38 acres of T37-2. As noted in **Table 3-1**, DCAs with Managed Vegetation will include areas that are shrub dominated (most of the Managed Vegetation area of T32-1 and all of the Managed Vegetation area of T37-1); the remaining areas will be predominantly meadow (most of the Managed Vegetation area of T37-2).

Saltgrass (*Distichlis spicata*) has been cultivated and maintained as a vegetation dust control measure on existing DCAs T5 through T8, located in the southeastern portion of the lake. Under Phase 7a, Managed Vegetation in a farm-like monoculture is not proposed. A revised plant species list for Owens Lake BACM was developed in 2010 and has been approved by GBUAPCD. The plant species on this list meet the locally-adapted native criterion specified by the 2008 SIP. In addition to saltgrass, 39 species have been proposed to increase the habitat diversity of the Managed Vegetation areas and increase the diversity and amount of seed produced on the playa for use in future projects (**Table 3-2**). The final species mix in T32-1, T37-1, T37-2 and the Transition Areas will depend on the availability of planting material, and suitability of species to soil and hydrologic conditions. Most of the T32-1 area is relatively well drained and will probably be reclaimed (i.e., decline in salinity) fairly rapidly. T37-2 is less well drained and may require additional time for reclamation. The initial cover may be achieved by fast-growing species, but after some time, the stand will probably change and diversify, partly from planted material, and partly from volunteer plants established from windblown seed.

An existing supply of seeds is stored by Native Seed Company, Inc. and is available for use. Additional seed of most species will need to be collected. Typically, seeds will be collected from locally adapted native seed sources on and adjacent to Owens Lake. Seed of some herbaceous species may be multiplied by planting in managed areas and then harvested. Once collected and cleaned, seed will be tested for germination, dried and stored. Before planting, some seed may require special treatment to break dormancy. If the full complement of desired species is not available initially, the area may be over-seeded or interplanted with additional species in the future. While seeding is preferred, some species may also be transplanted to accelerate establishment of vegetative cover. The finished habitat will consist of a variety of plants native to the Owens Lake area.

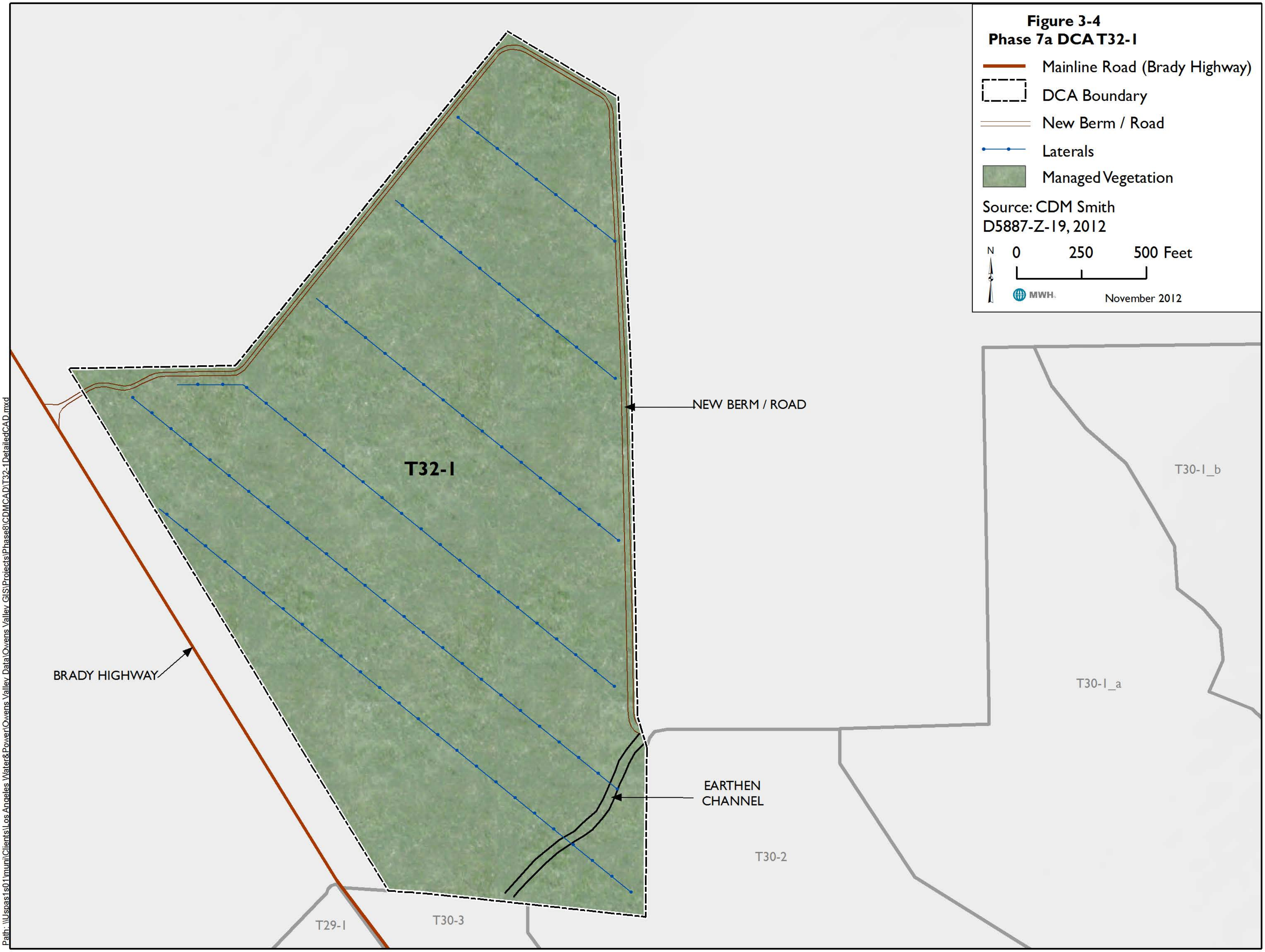

Figure 3-4
Phase 7a DCA T32-1

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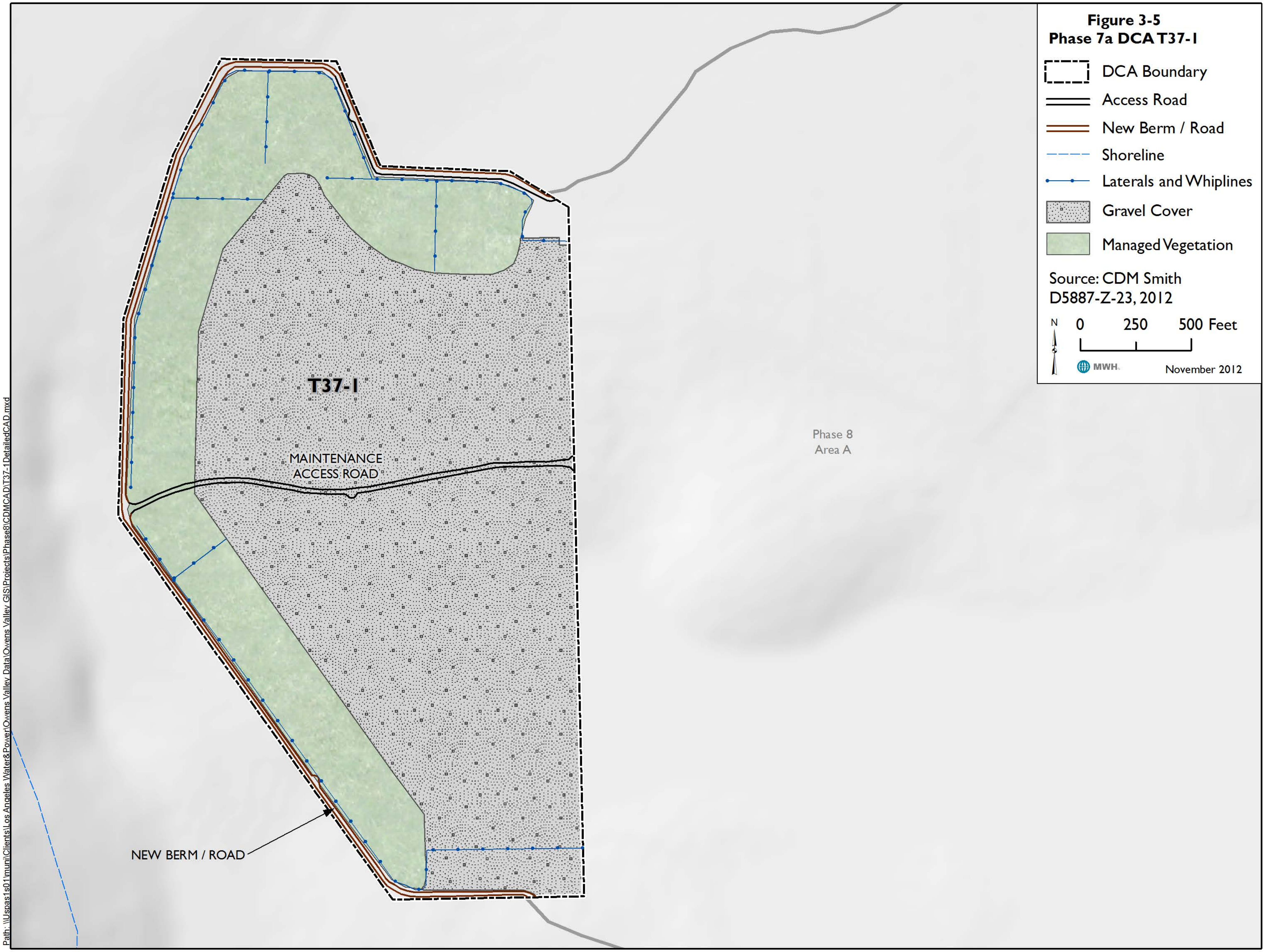


Figure 3-5
Phase 7a DCA T37-1
DCA Boundary
Access Road
New Berm / Road
Shoreline
Laterals and Whiplines
Gravel Cover
Managed Vegetation
Source: CDM Smith
D5887-Z-23, 2012
N
0
250
500 Feet
MWH
November 2012
T37-1
MAINTENANCE
ACCESS ROAD
NEW BERM / ROAD
Phase 8
Area A
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\Phase8\CDMCAD\T37-1DetailedCAD.mxd

Table 3-2
Species Proposed for Managed Vegetation DCAs

Scientific Name	Common Name
Alkali Marsh Species	
Amphiscirpus nevadensis	Nevada bulrush
Anemopsis californica	Yerba mansa
Schoenoplectus maritimus	Saltmarsh bulrush
Cordylanthus maritimus	Bird's beak
Distichlis spicata	Saltgrass
Eleocharis parishii	Spikerush
Frankenia salina	Alkali heath
Helianthus annuus	Sunflower
Heliotropium curassavicum	Heliotrope
Juncus arcticus var. balticus	Wire rush
Juncus arcticus var. mexicanus	Mexican rush
Nitrophila occidentalis	Alkali pink
Poa secunda	Blue grass
Schoenoplectus americanus	Bulrush
Sporobolus airoides	Alkali sacaton
Sesuvium verrucosum	Verrucose seapurslane
Playa Scrub Species	
Atriplex confertifolia	Shadscale
Atriplex lentiformis ssp. torreyi	Torrey's saltbush
Atriplex parryi	Parry's saltbush
Atriplex phyllostegia	Leafcover saltweed
Cleome sparsifolia	Fewleaf bee plant
Cleome lutea	Yellow bee plant
Cressa truxillensis	Alkali weed
Kochia californica	Mojave red sage
Poa secunda	Blue grass
Sarcobatus vermiculatus	Greasewood
Suaeda moquinii	Bush seepweed
Chrysothamnus nauseosus	Rubber rabbitbrush
Machaeranthera carnosa	Shrubby alkaliaster
Marsh and Riparian Species	
Paspalum distichum	Knotgrass
Populus fremontii	Fremont cottonwood
Salix lasiolepis	Arroyo willow
Schoenoplectus californicus	Bulrush
Typha domingensis	Southern cattail
Typha latifolia	Broad-leaved cattail
Cyperus laevigatus	Smooth flatsedge
Juncus torreyi	Torrey's rush
Triglochin concinna	Slender arrowgrass
Muhlenbergia asperifolia	Scratchgrass
Phragmites australis	Common reed

The goal will be to establish a compliant vegetative cover as quickly as possible. Vegetative cover is assessed each fall, and compliance is determined by comparing cover levels with criteria contained in the revised BACM definition. These new criteria allow for more variability in soil conditions and plant growth while requiring an overall average vegetation cover of 37 percent. The revised criteria have been applied to the existing Managed Vegetation DCAs during the 2009 and 2010 seasons with good agronomic and dust control results.

3.1.2.2 Managed Vegetation Construction

Irrigation systems will be installed and may include sprinklers, bubblers or drip irrigation. For areas with sprinklers or bubblers, irrigation piping will be buried to avoid damage from traffic, animals, temperature fluctuations, and UV radiation. Laterals (HDPE) will convey flow to an array of either buried or above-grade HDPE whiplines spaced approximately every 45 feet. Sprinkler heads or bubblers will be located approximately every 45 feet along each whipline. Similar to Shallow Flooding, a flush system will be installed as part of the Managed Vegetation piping.

Some irrigation systems (i.e., drip irrigation) require filtration of water; filters would be located at the turnout or in the field. Liquid fertilizer will periodically be blended into irrigation water at relatively low rates that have been shown to accelerate growth and increase salinity tolerance (and therefore plant growth and survival) of several native species studied on Owens Lake. Fertilization is anticipated to be required twice per year. No new permanent fertilizer stations are proposed. Concrete pads (with containment for the injection point) will be constructed in T1A-2a, T28N/28S, T30-1, T37-1b and T37-2 for use by portable fertilizer delivery tanks. Periodic fertilizer delivery would be by flatbed or pickup truck.

Broad, raised ridges will be formed to provide a drained area within which plants can grow. Without this feature, saline shallow groundwater can easily invade the root zone, especially during and after storms, and kill plants. The ridges will be laid out such that they gently traverse topographic contours, allowing surface water to drain slowly downhill (but avoid water erosion that might result from steeper gradients) along the direction of the broad ridges. Closed depressions that would otherwise prevent surface drainage will be opened by grading. If necessary, fertilizer to promote early growth may be applied and incorporated into the soil. The amounts of fertilizer applied to native plant stands are typically low relative to what is used for agricultural production, but the ability of plants to tolerate drought and salinity, and to rapidly expand to protect the soil, is greatly enhanced with fertilization.

Initial reclamation (reduction of salt concentration in the surface soil by irrigation) will be completed before planting. This may require several irrigation events over approximately 45 days. Once monitored soil salinity levels have declined to acceptable levels, the land will be allowed to dry sufficiently until it can again bear equipment traffic. Temporary above grade pipelines on existing berms will be used to convey brine from reclamation to existing high salinity ponds.

Seeding will be done with a range drill seeder (wheeled seed bin that tows behind a tractor) capable of seeding a diverse mix of seeds of varied sizes and shapes. Seed is dispensed from the bottom of the box and shallowly planted by discs that also break up surface soil, providing good seed-soil contact needed for germination and emergence. Other methods may include a pull type broadcast seeder with cultipacker or hand seeder (belly grinder).

3.1.3 Gravel Cover

3.1.3.1 Gravel Cover Description

Under the Phase 7a project, a 4-inch-thick layer of coarse gravel will be installed in T1A-3 (**Figure 3-6**), T35-1, T35-2 (**Figure 3-7**), approximately 69 percent of T37-1, and portions of Transition Areas T28N and T28S to reduce PM_{10} emissions by: (a) preventing the formation of efflorescent evaporite salt crusts at the surface, because the large pore spaces between the gravel particles disrupt the capillary movement of saline water to the surface where it can evaporate and deposit salts; and (b) creating a surface that has a high threshold wind velocity so that direct movement of the large gravel particles is prevented and the finer particles of the underlying lake bed soils are protected.

The term “gravel” includes clasts from both fluvial and alluvial sources and crushed stone. The gravel will be screened to greater than ½-inch in diameter, 3-inch diameter maximum, pursuant to the specifications issued by GBUAPCD (GBUAPCD, 2008a). Gravel application is estimated at approximately:

- T1A-3 - 420,000 tons distributed over 518 acres
- T28N – 85,000 tons distributed over 104 acres
- T28S – 50,000 tons distributed over 62 acres
- T35-1 - 55,000 tons distributed over 69 acres
- T35-2 - 75,000 tons distributed over 95 acres
- T37-1 - 75,000 tons distributed over 94 acres

Gravel Sources. It is anticipated that gravel will be obtained from local gravel production operations such as the F.W. Aggregate Dolomite mine or the LADWP Shale borrow pit. The LADWP Shale borrow pit is located just west of the Keeler Fan gravel site – a site previously considered as a gravel source and referenced in the Memorandum of Agreement between LADWP and the GBUAPCD (1998 MOA). Shale is a fine-grained sedimentary rock consisting of compacted and hardened clay, silt or mud. The LADWP Shale borrow pit is located east of SR 136, approximately 1.5 miles southeast of Keeler, and less than 2 miles from the lake bed. The site, currently permitted for 40 acres of development, is located on public lands managed by the BLM and operated per the requirements of the Surface Mining and Reclamation Act (SMARA).

The F.W. Aggregate Dolomite mine is a privately owned commercial aggregate facility located in Dolomite, California, approximately 0.75 miles southeast of Swansea. The access point for the mine is directly off SR 136, between Swansea and Keeler. The Dolomite mine is situated on both privately owned lands and public lands managed by the BLM. Three subareas of the mine (Durability, North Pole, and Translucent) total approximately 480 acres and are able to produce

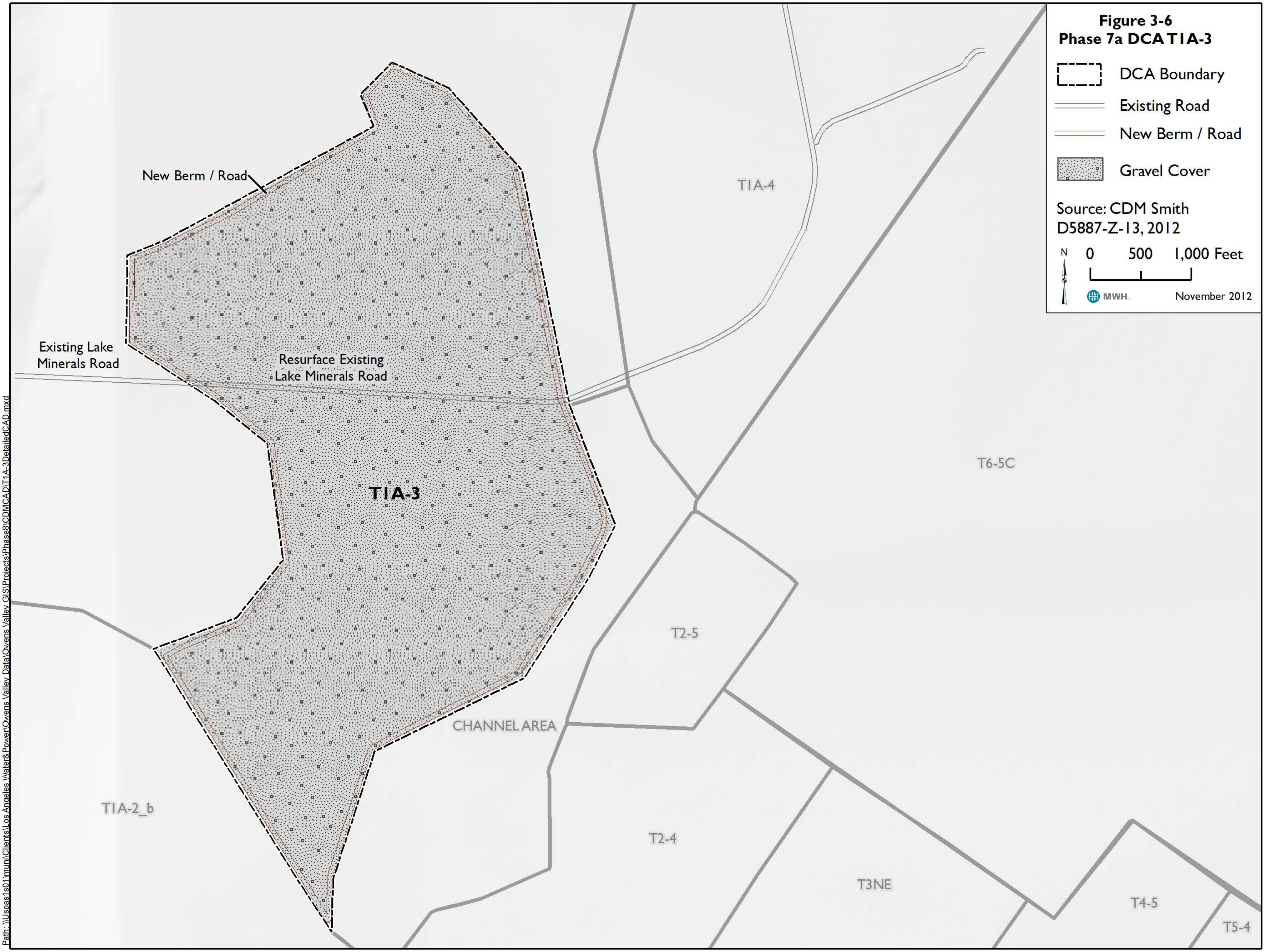


Figure 3-6
Phase 7a DCA T1A-3
DCA Boundary
Existing Road
New Berm / Road
Gravel Cover
Source: CDM Smith
D5887-Z-13, 2012
N
0
500
1,000 Feet
MWH
November 2012
New Berm / Road
Existing Lake
Minerals Road
Resurface Existing
Lake Minerals Road
T1A-3
T1A-4
T6-5C
T2-5
CHANNEL AREA
T1A-2_b
T2-4
T3NE
T4-5
T5-4
Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\Phase8\CDMCAD\T1A-3DetailedCAD.mxd

Figure 3-7
Phase 7a Transition Areas to Gravel Cover T35-1 and T35-2

Path: \\Uspas1s01\muni\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\Phase8\CDMCAD\T35-1_T35-2DetailedCAD.mxd up to 50 million tons; the site is permitted up to the year 2057 (T. Lopez, pers. comm., June 25, 2010). Rock at the F.W. Aggregate site is obtained from a dolomitic limestone source (mountain face), which is blasted and crushed to supply primarily white decorative rock. The existing 0.14 square miles of Gravel Cover DCM area (Corridor 1 which separates Phase 8 Areas A and B) was covered with limestone from the Dolomite mine. This source was also used for the recently completed Phase 8 project, and has also supplied other areas on the lake bed where gravel and rip-rap were necessary for road construction and for armoring of berms.

Gravel Effectiveness. The effectiveness of Gravel Cover is summarized from the 2008 SIP (GBUAPCD, 2008a). According to GBUAPCD, gravel blankets (also known as Gravel Cover) are effective at controlling dust emissions on essentially any type of soil surface. A gravel layer forms a non-erodible surface when the size of the gravel is large enough that the wind cannot move the surface. If the gravel surface does not move, it protects finer particles from being emitted from the surface. Gravel and rock coverings have been used successfully to prevent wind erosion from mine tailings in Arizona (Chow and Ono, 1992).

GBUAPCD estimated the potential PM_{10} emissions from a gravel layer using the USEPA emission calculation method for industrial wind erosion for wind speeds above the threshold for the surface (GBUAPCD, 2008a). PM_{10} will not be emitted if the wind speed is below the threshold speed. With a minimum particle size of ½ inch, a gravel layer will have a threshold wind speed of more than 90 miles per hour measured at 10 meters (Transportation Research Board, 1992; Ono and Keisler, 1996). GBUAPCD predicted that PM_{10} emissions would be virtually zero for a gravel layer since the threshold wind speed to entrain gravel, and thus PM_{10}, is above the highest wind speeds expected for the area. A 100 percent reduction of PM_{10} from areas that are covered by gravel was predicted.

The proposed 4-inch-thick gravel layer is intended to prevent capillary movement of salts to the surface. When fine sands and silts fill in gravel void spaces, capillary rise of salts can reduce the dust control effectiveness of a gravel layer. In addition, finer particles would lower the average particle size and lower the threshold wind speed for the surface. The GBUAPCD performed small-scale gravel test plots at two sites on Owens Lake starting in June 1986. These tests showed that 4-inch-thick gravel blankets composed of ½- to 1½-inch and larger rocks prevented capillary rise of salts to the surface. Observations of un-graveled test plots in the same area, one with no surface covering and another with local unscreened alluvial soil, showed that salts would otherwise rise to the surface (Cox, 1996).

Gravel Coloration. In accordance with the 1998 MOU between the City and the GBUAPCD, gravel used for dust control on Owens Lake shall be comparable in coloration to the lake bed soils. The color of gravel from the LADWP Shale borrow pit and the F.W. Aggregate Dolomite mine is discussed in **Section 4.1**. CSLC approved the color of the gravel from the Dolomite mine for use on the Phase 8 project area (C. Fossum, pers. comm., 2011). It is anticipated that gravel use will again be reviewed by CSLC prior to approval of a lease for the Phase 7a project. [A photograph of the Phase 8 area is included in **Section 4.1** of this EIR.]

Permeable Geotextile Fabric. Gravel Cover will be placed over a nonwoven geotextile fabric (anticipated to be approximately 2.3 millimeter [90 mils] thick to prevent gravel from settling into lake bed sediments and thereby losing effectiveness in controlling dust emissions). Geotextile membranes are artificial fabrics that have a variety of uses including: filtration/drainage, ground stabilization, structural waterproofing, land containment, as well as weed and root control. For this use, the permanent geotextile will be permeable to allow draining. Nonwoven geotextiles are pervious sheets of polyester or polypropylene composed of fibers held together by needle punching, spun bonding, thermal bonding or resin bonding. The geotextile is chemically inert and generally not affected by acids and alkalis that may be present in the soils. As noted in **Appendix C**, the geotextiles to be used for the project are non-hazardous articles as defined by the Federal Hazard Communication Standard CFR 1910.1299.

Access Roadways for Gravel Areas. The boundaries surrounding T37-1 and T1A-3 will have raised roadbeds for vehicle access and for wind protection to limit sand inundation of the gravel. The roadbeds will be earthen, approximately 3 feet high, 16 feet wide and armored with gravel. Vehicle bypass pads (turnoff or turnaround pads) (approximately 20 feet by 40 feet in area) will facilitate vehicle travel in two directions. Geotextile fabric may be placed directly on the existing surface to create a firm base. The earthen raised roadway will be constructed over the geotextile fabric. Earthen side slopes facing water or adjacent to potential runoff flows will be armored with rip rap. Earthen slopes not directly in contact with water and travel surfaces will be covered with road base. Installation of access roadways on the boundaries of T37-1 and T1A-3 will include earthwork inside of the boundary of the DCAs; suitable earth material will be scraped, used to construct the raised roadway, and then the area will be smoothed to an even slope. An approximately 4-inch thick layer of base course (crushed rock less than 1 inch) from a local gravel source would then be placed on the travel surface. Gravel Cover for the access roadways shall be consistent with the type, size, and color of the Gravel Cover placed on the adjoining lake bed areas.

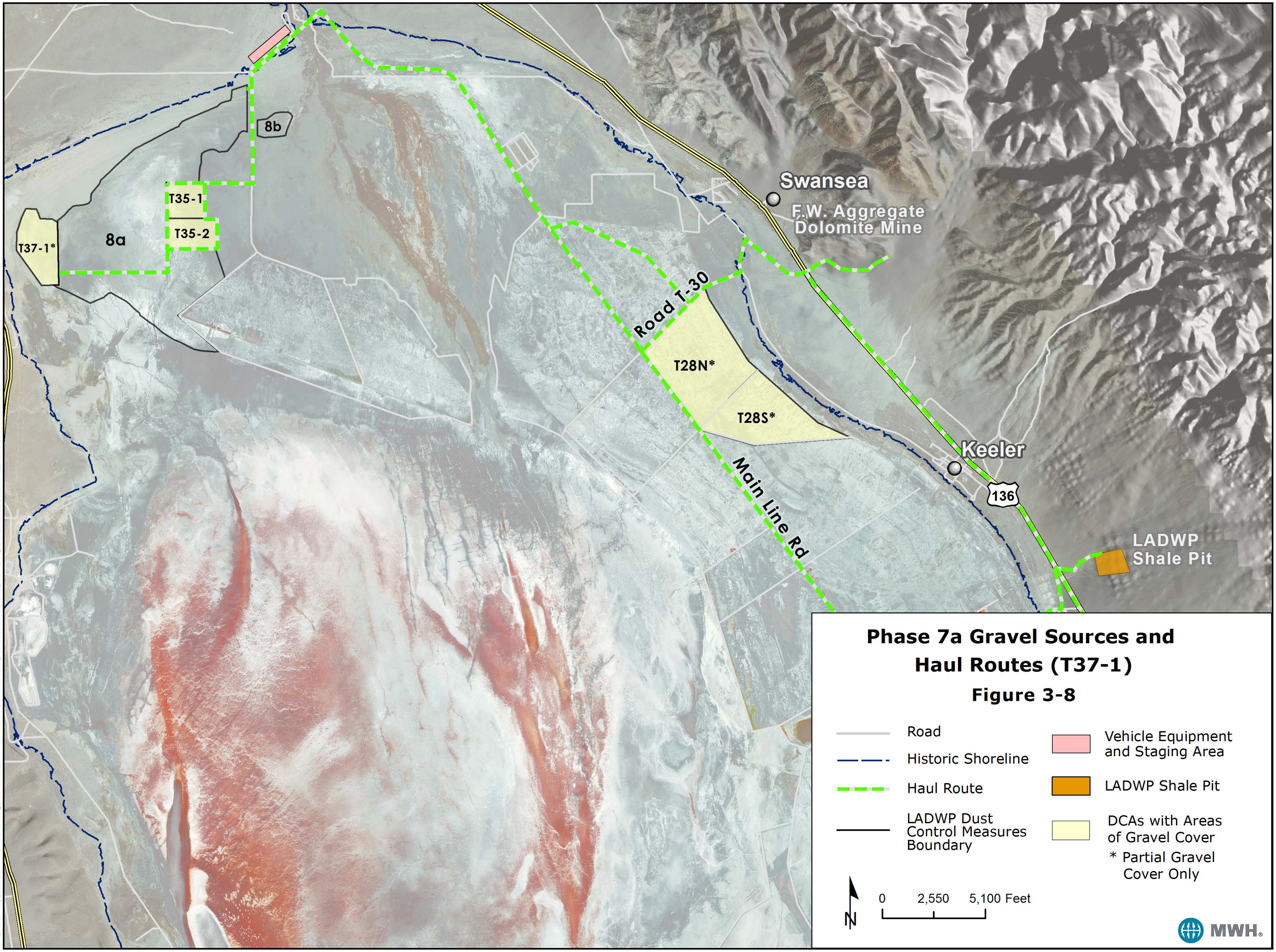
Drainage of Gravel Areas. Culverts will be constructed through the raised roadbed at low points within the Gravel Cover areas to allow drainage for collected water.

3.1.3.2 Gravel Cover Construction

Construction activities for gravel installation are:

- Development of gravel stockpile area
- Installation of access roadways
- Gravel conveyance
- Geotextile and gravel installation

Gravel Stockpile. Gravel stockpile areas will be developed within the boundaries of T1A-3, T28, T35-1, T35-2 and T37-1. If gravel is obtained from the LADWP Shale borrow pit, trucks will cross SR 136 to Sulfate Road to Main Line Road and then to the stockpile locations (**Figures 3-8** and **3-9**). If gravel is obtained from F.W. Aggregate Dolomite mine, trucks will cross SR 136 to the T30 road to Main Line Road and then to the stockpile locations. Travel along SR 136 and SR 190 may also be required. Note that the gravel source(s) will be determined by



Phase 7a Gravel Sources and Haul Routes (T37-1)

Figure 3-8

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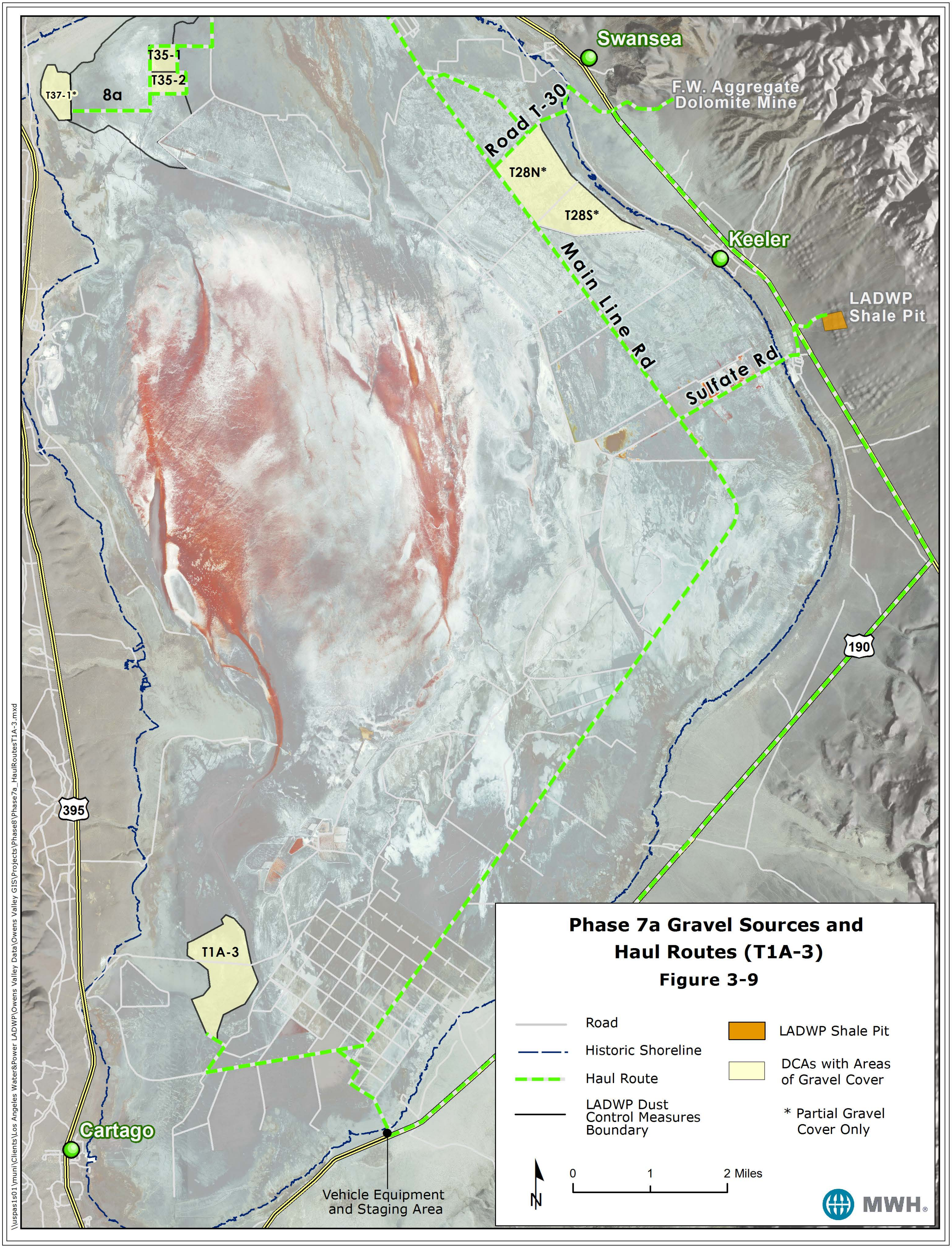

Phase 7a Gravel Sources and Haul Routes (T1A-3)

Figure 3-9

the Construction Contractor. Stockpile areas will be covered with aggregate to prepare the sites for gravel deliveries during the initial months of construction. Dump trucks will deposit gravel and a dozer will be used to pile the aggregate. Assuming 25 tons per truck, approximately 3,000 tons per day will be transported to each staging area location. Gravel transport will continue throughout the construction period concurrent with geotextile fabric and gravel installation. From the stockpile location, low ground pressure (LGP) vehicles will be used for travel directly on the playa. Depending on site conditions, conveyors may be used internally within individual DCAs or to move gravel from the stockpiles to the DCAs. A gravel conveyor from the shale borrow pit or the Dolomite mine to the lake is not currently proposed.

Geotextile Installation. Before installation of the geotextile membrane, land leveling may be required in areas where obstructions will damage the fabric. A pipe or I-beam dragged behind a tractor, box drag, scraper, or similar process will be used to remove localized high and low spots and prepare the surface; there will be no import or export of soils related to this minor site preparation. Fabric will be delivered to the site on spools carried by flatbed trucks. Small areas of fabric will be rolled out and staked to secure them before gravel installation.

The two vehicle and equipment staging areas previously used (for Phases 7 and 8) will be used for Phase 7a. These previously disturbed sites are located near the intersection of Main Line Road and Corridor 1 at the north end of the lake (20 acre site; **Figure 2-2**) and at the southern end of the lake adjacent to Dirty Socks Access Road (2.7 acre site; **Figure 3-10**). In addition to office trailers and equipment and vehicle storage, these areas will have fueling stations for gas and diesel. Fuel trucks will be used to refuel construction equipment (including the LGP gravel trucks) and the long haul gravel trucks; no vehicle fuels or oils will be stored in the gravel stockpile areas. Additionally, refueling may occur at the existing LADWP Sulfate facility. Once the geotextile is staked, dozers and ground crews will spread gravel to the required 4-inch thickness.

The onsite construction workforce will consist of laborers, supervisory personnel, support personnel, and construction management personnel (see **Section 4.2**, Air Quality, for a detailed list of anticipated construction personnel).

3.1.4 Tillage

Tillage is commonly used to control wind erosion in agricultural and arid regions around the world. It works by roughening the soil surface, rendering it more resistant to wind erosion. Surface roughness reduces the wind velocity so that windblown soil particles like sand are trapped. The maintenance of natural soil aggregation (clods) through appropriate tillage methods also helps to form a stable surface resistant to wind erosion by binding together fine-grained soil particles that might be prone to wind transport.

Tillage was previously applied on the playa of Owens Lake for temporary dust control in some Shallow Flooding construction areas (T21-B, T18-0, T17-1_a, T17-2_a, T16, T10-2_b, and T10-3) between October 1, 2009 and April 1, 2010. This Tillage reduced the frequency and intensity of observed emissions. Tillage has been implemented in T12-1, an area with relatively heavy (rich in clay and silt) soils, since January 2012 per the terms of a lease agreement with CSLC (CSLC, 2010) (**Figures 3-11** and **3-12**). Tillage in T12-1 was initially evaluated in the

Phase 7a Construction Staging Area at Dirty Socks

Figure 3-10

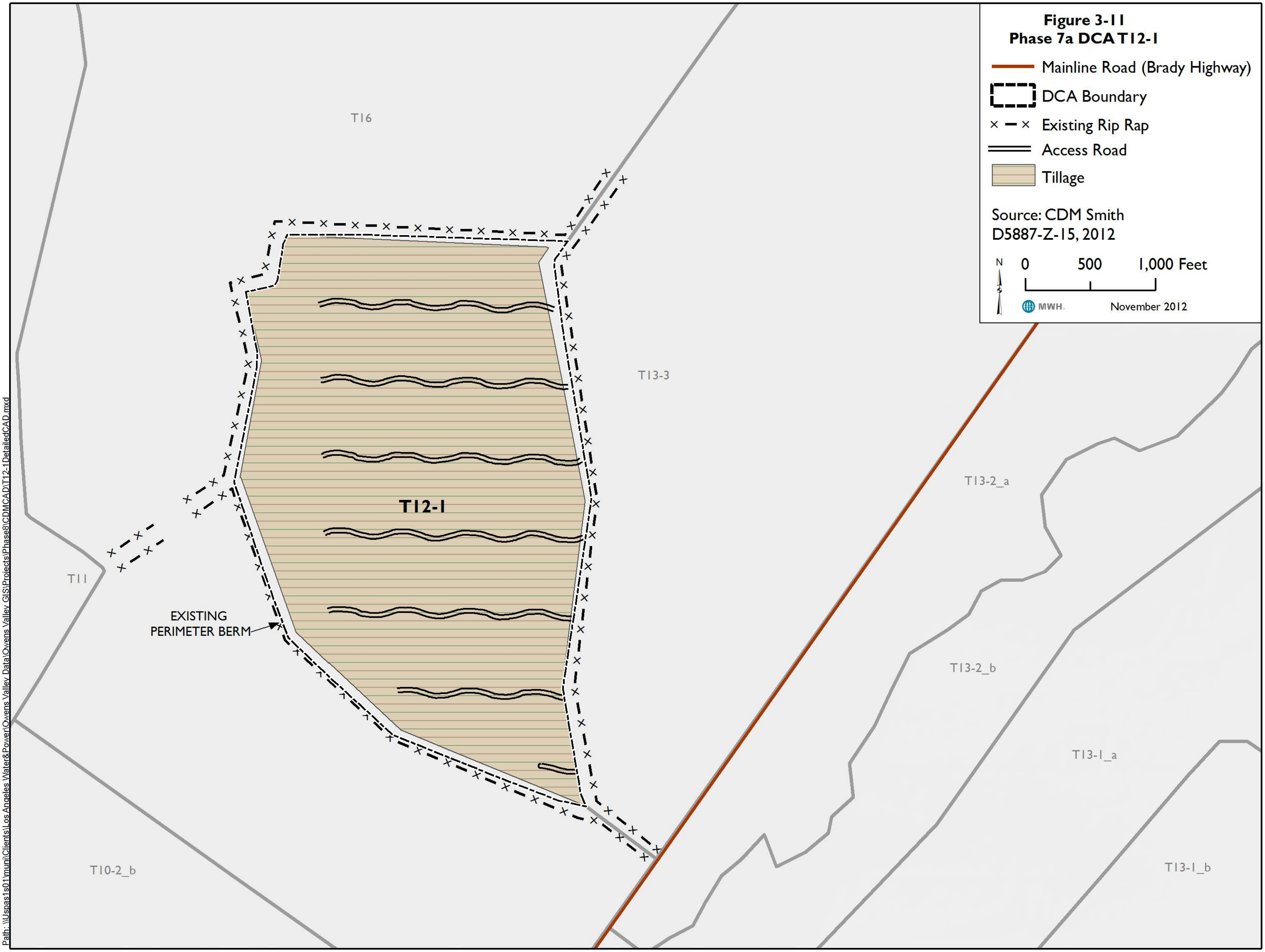

Figure 3-11
Phase 7a DCA T12-1

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Figure 3-12
Tillage in T12-1

Source: LADWP, October 19, 2012

Addendum to the Supplemental EIR for the Owens Lake Dust Control Measures for the Phase 7 project (LADWP, 2010a).

Under the Phase 7a project, the existing Tillage would be augmented with irrigation. The Tillage BACM Study Operations Plan (LADWP, 2011) states that the area will be initially tilled and then, once dust control efficiency begins to deteriorate, it will be irrigated to increase soil moisture. Irrigation piping (submains and whiplines, flush lines connected to flush mains), if used, would be buried more than 2 feet below the soil surface (such that they are below the reach of the tillage equipment) with sprinkler risers positioned throughout the DCA; the layout will be similar to the Managed Vegetation areas. Alternatively, a temporary above ground sprinkler system, or other portable means to provided irrigation, may be used when necessary to rewet the soil.

Tractors pulling plows or harrows will roughen the surface of T12-1 creating serpentine swaths of tilled ridges (to provide greater control for all wind directions, and to avoid a gridded, regimented appearance) with spacing between swaths allowing for irrigation installation and maintenance, access to monitoring equipment, and re-entry for re-tillage. Tillage swath directions will generally be perpendicular to the prevailing wind. Since the prevailing winds are north-south, tillage will be done in a generally east-west direction. The goal of the 3-year BACM test will be to establish dust control efficiency relationships over a wide range of climatic conditions upon which to base performance specifications in a new BACM description. Over time, the surface roughness achieved by Tillage will begin to be altered by weathering and dust control efficiency may decline. The amount of fine material (sand and smaller particles) on the surface may change due to 1) disaggregation of soil, 2) crusting and re-aggregation of fine material, 3) deposition of transported fine material, and 4) erosion and export of material. When monitoring indicates that these processes have reduced the dust control efficiency achieved by Tillage, the area will normally be re-tilled. The goal of re-tilling will be to restore erosion-resistant levels of roughness and aggregation. When control efficiency can no longer be restored by Tillage alone, the area will be irrigated to restore soil moisture, then the area will be left to drain and dry enough to permit re-tillage, and then the area will be re-tilled.

Monitoring will include visual observations of surface conditions and emissions, measurement of meteorological conditions, sand motion, and air quality, and other actions as outlined in the Tillage BACM Test Operations Plan (Air Sciences, 2011). Following the BACM test, Tillage in T12-1 may be continued or Gravel Cover may be applied.

3.1.5 Transition Areas from Shallow Flooding to BACM Hybrid

New Shallow Flooding in subareas T1A-4 and T37-2, new Managed Vegetation in T32-1, T37-1 and T37-2, and Tillage with irrigation in T12-1 are estimated to require on the order of 3,500 acre-feet per year (afy) of water. To provide water to these areas, approximately 3.15 square miles of six existing DCAs (T1A-2_a, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b) will be transitioned from Shallow Flood to a hybrid mix of approved BACMs. [An additional 0.26 square miles of existing Shallow Flooding area (T35-1 and T35-2) will be transitioned to Gravel Cover.] Some of the areas proposed for transition are currently partially vegetated. For example, T30-1 (_a and _b) is currently designated as Shallow Flooding by the LADWP and evaluated as Shallow Flooding by the GBUAPCD, despite significant vegetative cover. Currently, vegetative cover in this area is being evaluated relative to proposed Managed Vegetation criteria. Areas that pass will be proposed to the GBUAPCD for evaluation as Managed Vegetation for compliance purposes.

The six Transition Areas will be developed as BACM Hybrid. Each portion of these areas would be evaluated as a DCM currently defined in the SIP for dust control compliance purposes. Under the Hybrid concept, DCAs will be a mix of Shallow Flooding types (ponded water, saturated soil, and dry land), Managed Vegetation (shrub/dry meadow and alkaline meadow), with areas of Gravel Cover. Managed Vegetation areas will generally be up gradient of ponded or saturated areas. Broad beds with furrows will be incorporated into some of the DCAs providing topographic variations and enhancing natural drainage. Irrigation systems similar to those previously described will be installed in non-gravel areas. Gravel will be a 4-inch-thick layer, as previously described for Gravel Cover DCAs. Subtle topographic variations will soften the historically straight lines of the berm roads and ponded areas. Meandering edges and potentially variations in the rock and color size of the gravel will also be incorporated.

The mix of DCMs in the Transition Areas is summarized in **Table 3-1**. Preliminary renderings of how BACM Hybrid areas will look are provided in **Figures 3-13** and **3-14**.

Source: CSLC presentation materials, December 11, 2011.

Figure 3-13
Rendering of BACM Hybrid Area – T36-1_b

Source: CSLC presentation materials, December 11, 2011.

Figure 3-14
Rendering of BACM Hybrid Area – T28N/28S

Construction, reclamation, planting, establishment, and compliance in the Transition Areas will proceed as previously described for the new Managed Vegetation areas. However, due to potentially more challenging soil and drainage conditions in the Transition Areas, additional efforts for establishment may be necessary. Minor reconfiguration of the eastern berms for areas T28N and T28S may be required. Additional berm modifications may be necessary for access.

3.1.5.1 Transition Area Design by DCA

A design concept has been developed for each Transition Area, as follows:

T1A-2_a. The majority of this DCA will be seeded with alkali meadow plant species (**Figure 3-15**). Saturated soil areas at each end of the DCA will include patches of dry land to create variation and aesthetic interest to the site. The irrigation of the vegetated and saturated areas will be accomplished by converting the existing laterals from flood bubblers to sprinkler irrigation through the use of 2-inch HDPE whiplines. A visitor overlook will extend into the vegetated area of the DCA connected to Brady Highway by a maintenance access road.

T28N and T28S. The design for T28N and T28S will transform the existing terrain through grading and earthwork into a more natural looking site (**Figure 3-16**). The 754-acre area will incorporate large ponded areas with undulating edges to provide inlets and opportunities for habitat. The main ponded area, which is located in the southwest portion of the DCAs and on both sides of an existing berm road, will include 10 habitat islands. Habitat islands will be constructed from earth mounds. Another ponded area will be located at the northeast portion of T28N, near T30-1. The remainder of the DCA will be a mix of Managed Vegetation (alkali meadow and shrub/dry meadow), interspersed with Gravel Cover in varying colors and sizes, and areas of saturated soil. Areas of saturated soil will be edged by naturalistic earthwork to provide inlets. Public amenities will include a boardwalk loop trail (approximately 0.5 mile) at the end of the berm road near the border of T28N with T30-1. Public access will also be provided by the existing berm road between T28N and T28S.

T30-1. T30-1 is an existing habitat area, and although designated as Shallow Flooding, this DCA is currently substantially vegetated. An existing 43.5 acres of wetlands at the northern portion of the DCA will be undisturbed by project construction and maintained. The design for this DCA will soften the straight berm road and ponding edges by creating meandering berms and reworking the pond edges to cover existing bare non-vegetated land (**Figure 3-17**). The large ponded area will contain deep water for diving bird habitat, 23 variably-shaped habitat islands and 4 “whitecap” habitat islands. The “whitecap” habitat islands constructed from earth mounds will be covered with 8-12 inch riprap. Shallow Flooding will use the existing irrigation infrastructure, with some relocation of existing flood bubblers to accommodate expanded berm road pedestrian areas where necessary. A large area of seeded meadow will be established adjacent to the ponded area. The southern portion of the DCA will be seeded with a mix that is shrub dominated, designed to mimic natural adjacent desert saltbush scrub boundaries. An expanse of saturated soils adjacent to the shrub/meadow will increase the diversity of available habitats. Public amenities will include an elevated boardwalk through the meadow area with three overlook plaza features adjacent to the Shallow Flooding pond. Gravel Cover will be added to pedestrian-friendly berm road enhancements.

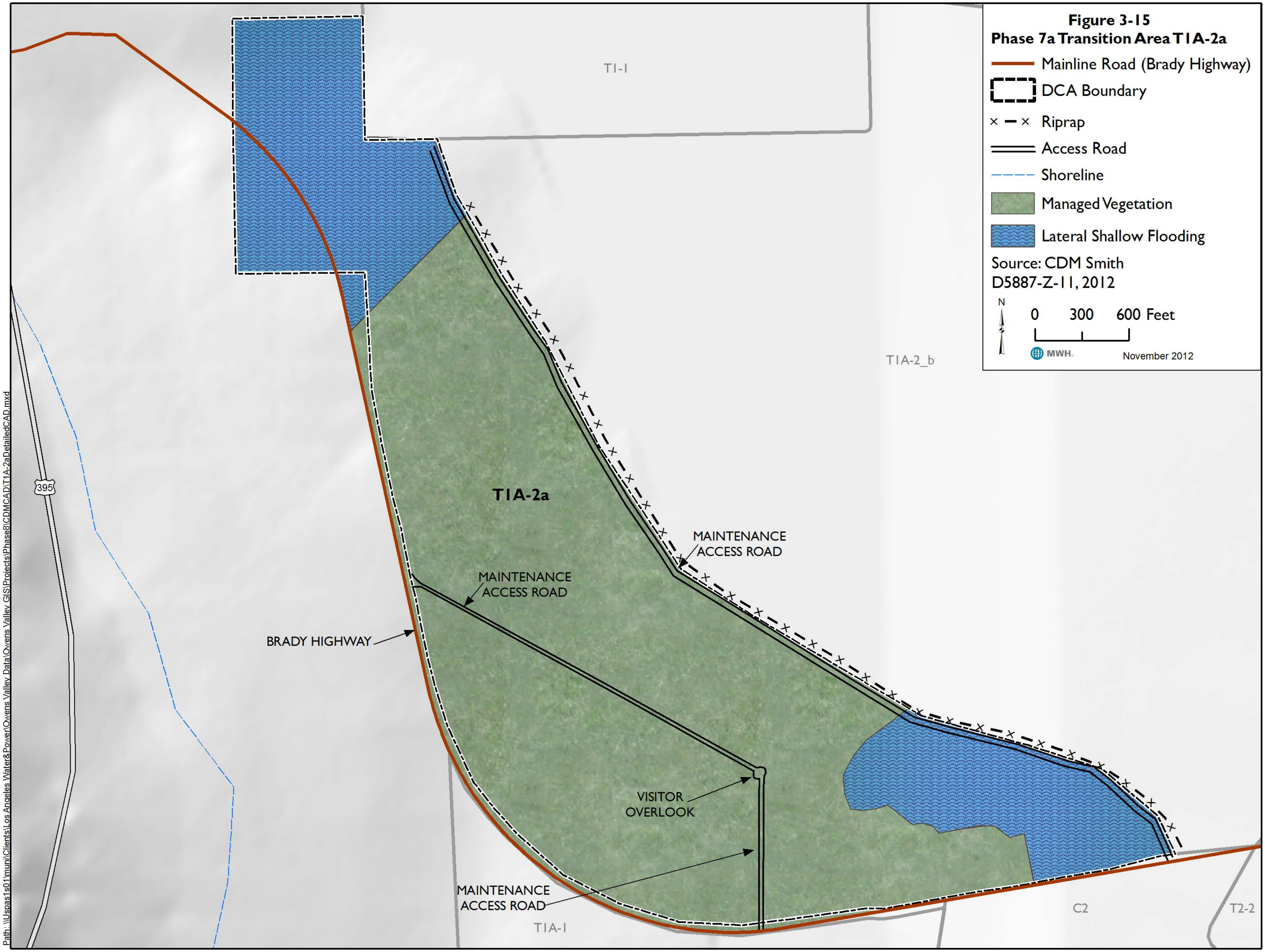

Figure 3-15
Phase 7a Transition Area T1A-2a

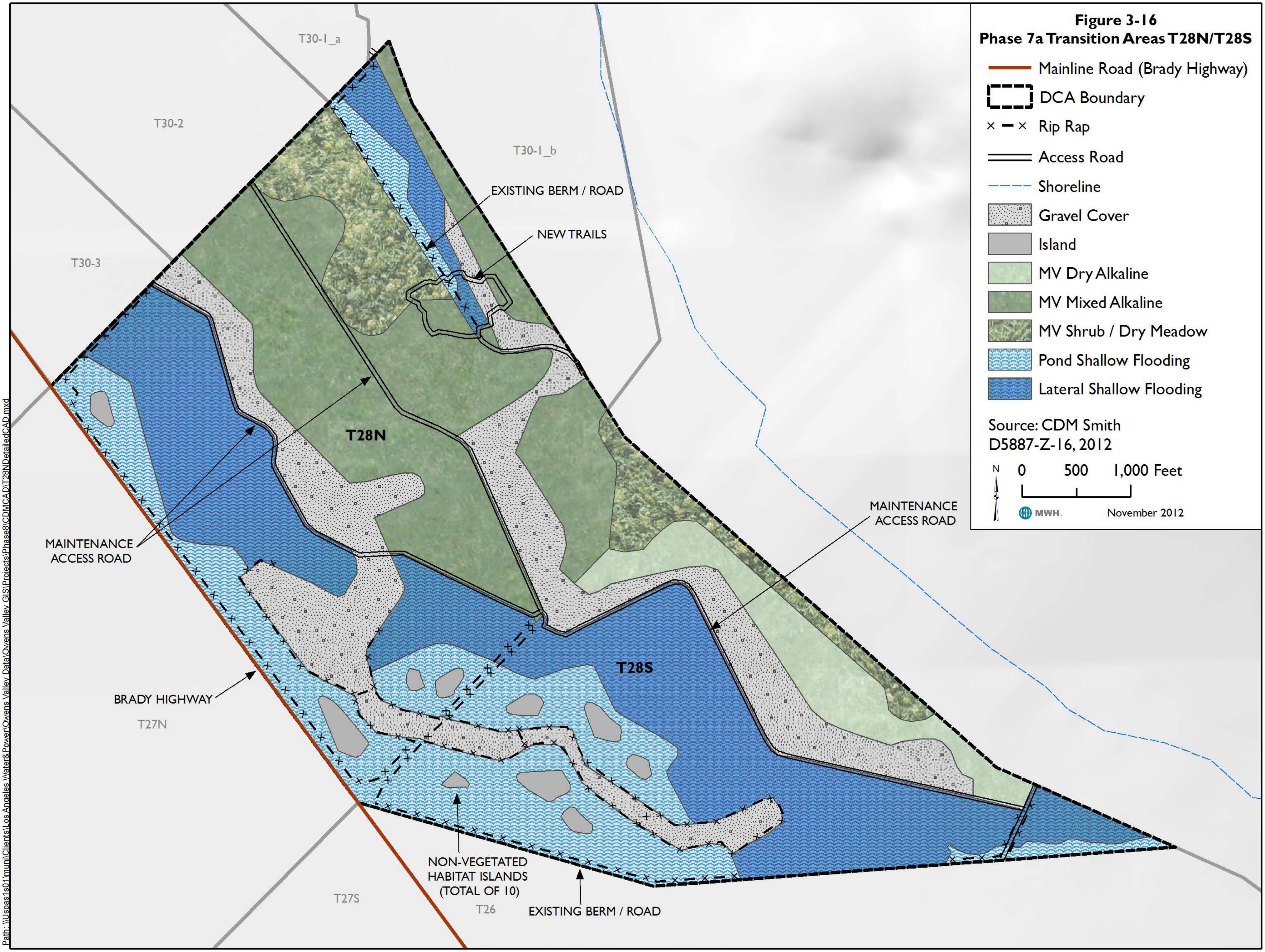

Figure 3-16
Phase 7a Transition Areas T28N/T28S

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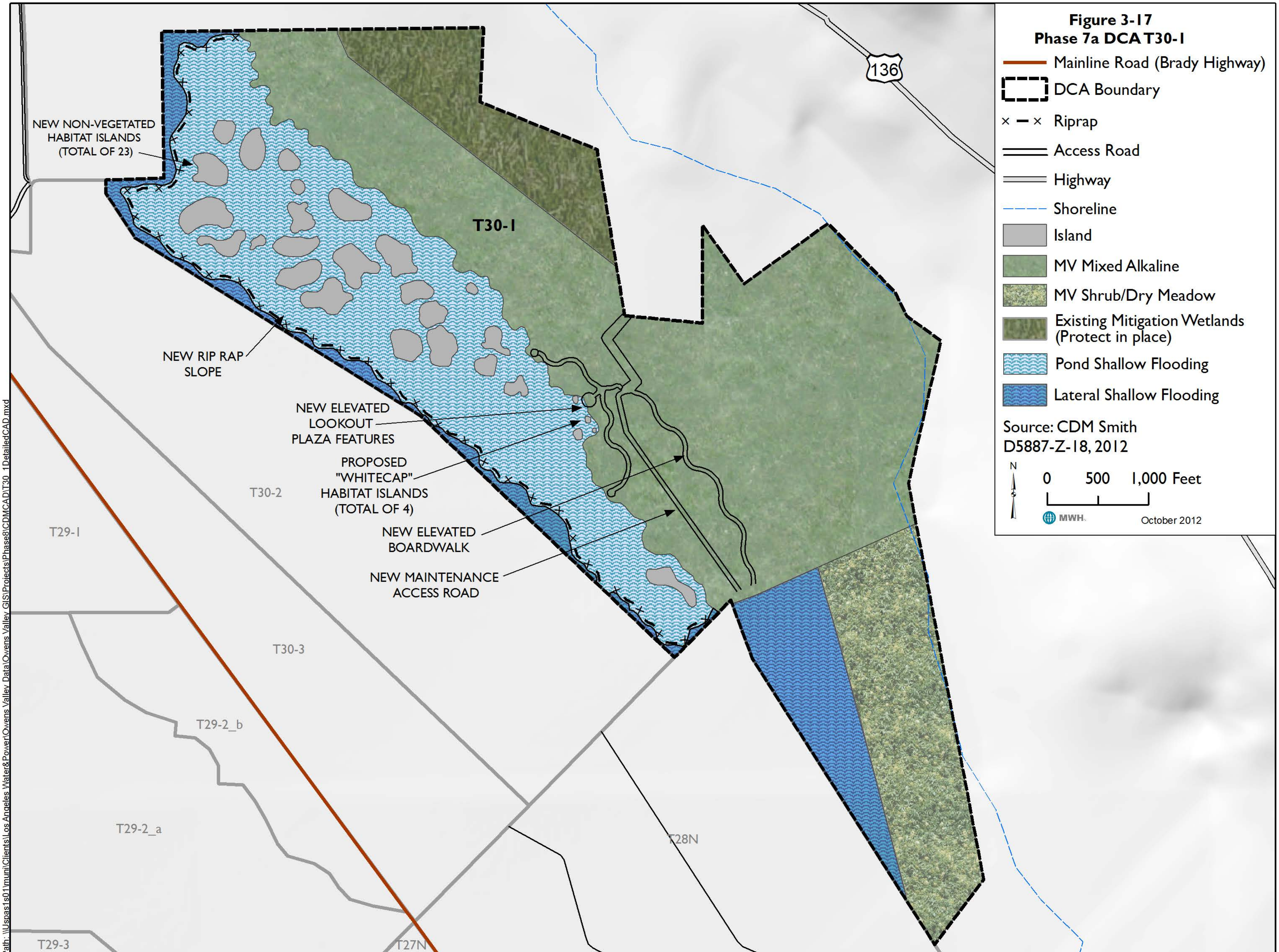

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T36-1_b. The majority of T36-1_b will be seeded with alkali meadow plant species (**Figure 3-18**). An area at the north side of the DCA will be seeded with shrub dominated species, and two small areas (approximately 5 acres) of pond will be located between T36-1_b and T36-1_a. Irrigation of the vegetated areas will be accomplished by converting the existing laterals from flood bubblers to sprinkler irrigation. An elevated boardwalk will provide an approximately 0.5 mile loop trail through the meadow and connect to the existing north-south berm road.

3.1.6 Other Features for Phase 7a DCAS

3.1.6.1 Access Roadway

In order to access project areas, an existing roadway from Highway 395 will be improved. Previously constructed in collaboration with Caltrans and BLM, the road is currently infrequently traveled and requires improvements for routine use. An approximately 4,000 ft long section traversing Inyo County, CSLC, and LADWP land will be widened from the existing 10 to 14 feet, to approximately 16 to 20 feet. The width of the work area for roadway construction will range from 40 to 50 feet. The road will be wider where the alignment turns to allow travel by heavy construction equipment. After smoothing the roadway surface, crushed aggregate base materials will be mixed with native soil or fill and then compacted. The stockpile for road base will be within the 40-50 ft work area. Several turnouts will also be constructed to facilitate 2-way travel. At this time, improvements to the portion of the road on BLM land are not proposed.

3.1.6.2 Drainage System

Drainage systems will be installed beneath Managed Vegetation fields and/or on the margins of Shallow Flooding areas. New drainage laterals to be installed in Phase 7a will be perforated plastic pipes (heavy duty corrugated polyethylene) in covered trenches placed 5 to 9 feet below the ground surface. The drainage system will control soil saturation to:

- maintain drained root zone under irrigated vegetation
- maintain drained pipe zone (prevent pipe floatation)
- capture water along the DCA perimeters to reduce seepage off-site

Drainage return flows can be recirculated into Managed Vegetation and Shallow Flooding areas. The existing drainwater system functions in this manner. A drainwater mainline (brineline) runs parallel to the water supply mainline throughout the dust mitigation area from T2 to T25. The drainwater mainline collects and delivers recirculated water to the Managed Vegetation and Shallow Flooding areas. Management of drainwater will ultimately depend on salt management needs for dust control, since drainwater tends to be saltier than water from the Los Angeles Aqueduct. As part of brine management, the following improvements will be constructed:

- A new pipeline will be constructed to allow the T27 tailwater and subdrain pump stations to discharge to the Shallow Flooding ponds at T29-2, T29-3 and T29-4. Isolation valves will be included so the flow can be sent to any combination of the three areas.

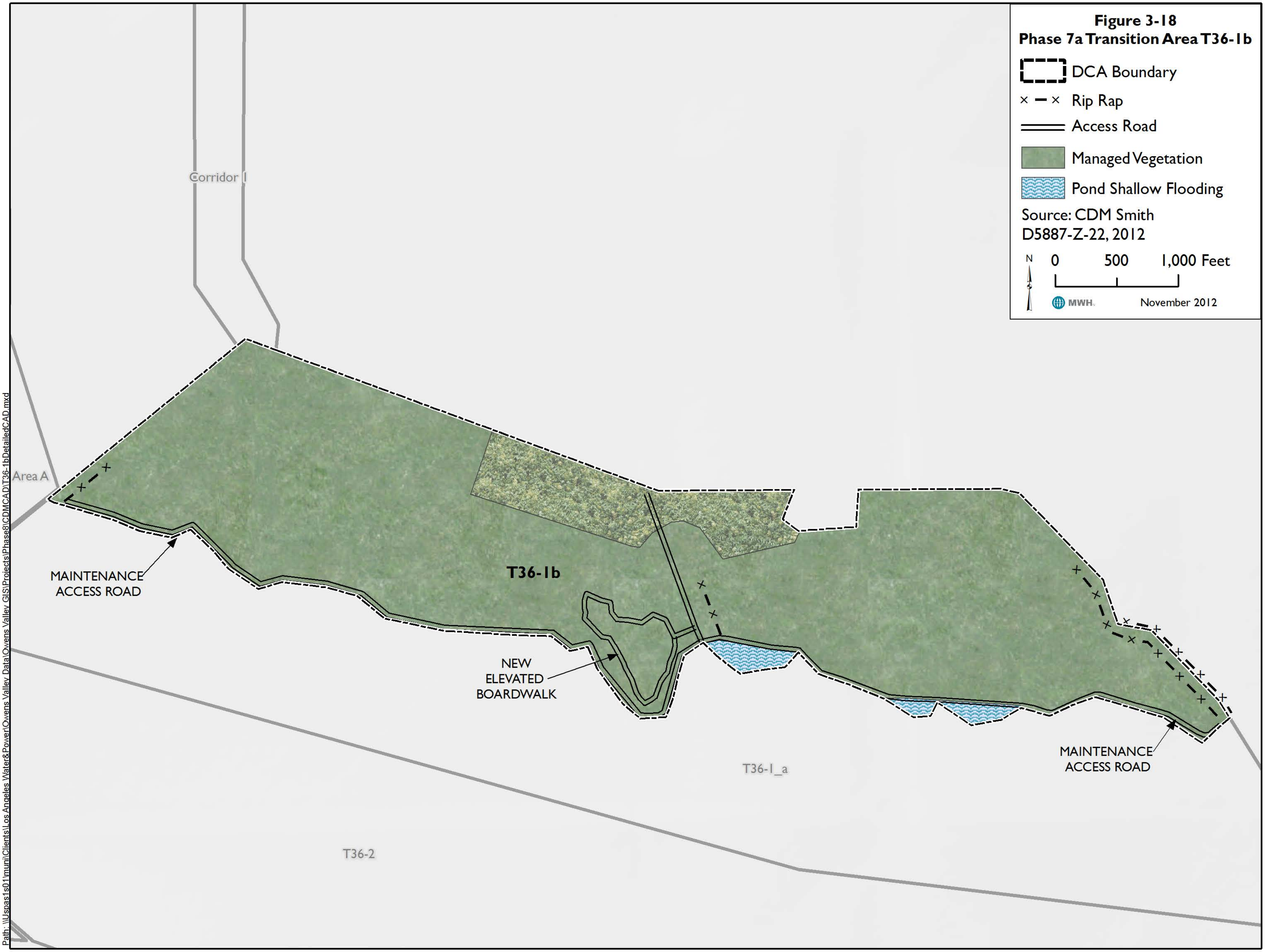

Figure 3-18
Phase 7a Transition Area T36-1b

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- A new pipeline will be constructed to allow a new T28 subdrain pump station to discharge to the shallow flood pond at T26. Improvements to the existing spillway or a new controlled outlet structure will be required between T26 and T24. A new controlled outlet structure between T24 and T25S will allow the brine to surface flow to the south. The T28 tailwater pump station will be eliminated.

- The T23 brine manifold will be reconstructed and the T23E tailwater and subdrain pump stations will be connected to the existing brineline. Updates to the SCADA system may be necessary to accommodate controls and signals for the control valve, and pressure and flow instruments.

- A short section of the mainline will be lowered to accommodate a controlled outlet structure for surface flow from the north Shallow Flooding areas to the T16 Shallow Flooding pond.

3.1.6.3 Power Supply and Controls

Power for pumps for water conveyance to and from DCAs is supplied by an existing underground 3-phase, 4.8 KV grid. The 4.8 KV grid will be connected to the new turnouts with directed buried cables. The turnouts have their own distribution system for power and controls. Transformers at the turnouts convert the power to lower voltages to supply various equipment, lighting, and control instrumentation. The 3-phase, 480 volt alternating current (VAC) is typically used for pump stations. Directed buried cables will be used to supply power from the turnouts to the pump stations. T1A-4, T37-2 and T36-1b will have small pump stations (each with two variable speed 25-50 HP pumps). For Phase 7a, a new high voltage cable will be installed to power pumps associated with T37-2.

3.1.7 Overall 7a Construction Activities

Construction activities for the Phase 7a project will include:

- Earthwork, berm re-enforcement and water distribution systems for Managed Vegetation Areas
- Planting and seeding in Managed Vegetation Areas
- Earthwork, berm re-enforcement and water distribution systems for Shallow Flooding Areas
- Irrigation system installation for Tillage
- Turnout and pump station construction
- Gravel installation

3.1.8 Dust Control During Construction

In compliance with GBUAPCD Abatement Order 110317-01, a Dust Control Plan will be implemented during construction. For the Transition Areas, the plan will specify measures to be taken when removing existing DCAs from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to:

- Temporary sand fences shall be installed where feasible as soon as practicable without delaying project completion and shall be maintained as necessary until areas of Managed Vegetation have been established
- Water trucks shall be used as necessary and feasible during construction
- Tillage shall be implemented where soil conditions allow
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor
- Construction activities shall cease during high wind events

3.1.8.1 Dust Standard Compliance During Phase 7a Construction

Since the length of the construction period for the Phase 7a project will exceed 1 year, the Transition Areas will be out of compliance with the dust standards for some period, with newly vegetated areas likely taking the longest before compliance is re-established; this is recognized by the Abatement Order. In order to only affect 3.0 square miles of existing dust control at a time, construction on 0.4 square miles or more may be conducted in the non-dust control season (July 1^{st} to September 30^{th}). For example, transition of the T35 ponds to Gravel Cover could be completed in the 3 months the DCAs do not have to meet the Shallow Flooding dust standard. Additionally, installation of some areas of BACM Hybrid may be completed in a manner that allows for dust compliance while construction is on-going. For example, T30-1 is partially vegetated. Construction of an irrigation system in a portion of the DCA could occur and the remaining vegetated area would still meet the dust compliance standard.

3.1.9 Operations and Maintenance

3.1.9.1 Gravel Cover

Once the Gravel Cover has been applied to the playa, limited maintenance will be required to preserve the gravel blanket. The gravel will be visually monitored for sand and dust accumulation, evidence of washouts, or inundation. If any of these conditions are observed over a substantial area, additional gravel will be transported to the playa. It is assumed that no maintenance will be needed in the initial years of operation. Subsequently, small areas may require replenishment and later, larger areas may require replacement. It is anticipated that the total volume of gravel on the Phase 7a areas may be replaced, at most, once every 50 years.

3.1.9.2 Shallow Flooding

To attain the required PM_{10} control efficiency, Shallow Flooding areas with 99 percent minimum dust control efficiency (MDCE) generally have 75 percent areal wetness cover from October 16 through May 15, 70 percent areal wetness cover from May 16 through May 31, 65 percent areal wetness cover from June 1 through June 15, and 60 percent areal wetness cover from June 16 through June 30. Surface saturation will continue to be monitored via satellite images (as is currently the practice). Maintenance activities will occur as needed throughout the year. However, when feasible, extended facility maintenance (repair of pumps, berms, laterals, and submains) will be completed during the non-dust control season when dust storms generally do not occur (July to September). Inflows, outflows and water quality in Shallow Flooding areas will also be monitored. Drains and valves will be inspected periodically and maintained as necessary.

3.1.9.3 Berms and Roadways

Berms and roadways will be continually maintained to prevent erosion and washout, and to maintain safe driving conditions. Maintenance activity will include minor earthwork and gravel replenishment.

3.1.9.4 Managed Vegetation

Vegetation will be monitored in the field to determine reclamation progress (declines in soil salinity), soil moisture, irrigation system function (including leak identification and repair), germination success, transplant mortality, and plant vigor. Once established, soil fertility and plant tissue will be monitored at least annually, and vegetative cover will be assessed with satellite imagery. At present, imagery is ground-truthed with specialized, near-surface digital images of vegetative cover. Operations activities will include maintenance of irrigation systems and replanting/reseeding as necessary.

After initial seeding, areas with limited growth would be assessed for drainage limitations. Drainage would be improved by constructing surface, French, or subsurface drains; or the area may be replanted. The site would continue to be managed to achieve dust compliance standards as swiftly as possible.

3.1.9.5 Tillage

Tillage in DCA T12-1 is being conducted as a 3-year BACM Test. Periodic wetting, re-tilling, and/or alterations in the configuration of the tilling may occur throughout the testing period. Operations activities will include maintenance of irrigation systems as necessary, as well as monitoring of surface conditions, meteorological parameters, and biological resources as part of the Tillage BACM Study Operations Plan (LADWP, 2011).

Section 4.1 Aesthetics

4.1 AESTHETICS

Based on the information presented in the Initial Study for the Phase 7a project (**Appendix A**), LADWP determined that the project would not have the potential to significantly impact the aesthetics of Owens Lake. However, a comment letter received from the CSLC (the land owner for the majority of the Owens Lake) raised additional issues regarding the visual impact of Gravel Cover (**Appendix B**). Therefore, impacts to visual character or the quality of the site and its surroundings have been carried forward for additional review in this EIR. Also, since release of the NOP, LADWP has conducted workshops with project engineers and landscape architects to develop design concepts for the Transition Areas that are intended to enhance the aesthetics of these areas of the lake bed. Additional information on the design of the Transition Areas is therefore included in this section of the EIR. As described in the Initial Study, the project will not substantially adversely affect a scenic vista, substantially damage scenic resources, or create a new source of substantial light and glare which would adversely affect day or nighttime views of the area. Therefore, these topics are not discussed further in this EIR.

4.1.1 Regulatory Framework

4.1.1.1 California State Lands Commission

The Phase 7a project area is located on historic Owens lake bed owned and operated in trust for the people of the State of California by the CSLC. A lease amendment from CSLC would be required in order to install the Phase 7a DCMs. CSLC will consider the visual impacts of the proposed project during review of the lease application.

4.1.1.2 Inyo County General Plan

The Conservation/Open Space Element of the Inyo County General Plan (2001) includes Goal VIS-1: Preserve and protect resources throughout the County that contribute to a unique visual experience for visitors and quality of life for County residents.

4.1.2 Existing Conditions

The Owens Valley is bounded by the eastern Sierra Nevada to the west and the Inyo Mountains to the east, with the Coso Range rising to the south. The valley floor is characterized by small, rural communities (e.g., Cartago, Olancha, Keeler, Swansea, and Dolomite) surrounded by dry, desert environment with minimal vegetation. Under existing conditions, views of Owens Dry Lake are characterized by pockets of desert vegetation, limited vegetated areas related to seeps and springs and the Delta, vast areas of desert playa, mining operations, the brine pool (which fluctuates in size) and the existing system of dust control – bermed areas periodically filled with water, areas of managed vegetation and gravel, and the internal roadway network (**Figures 4.1-1** and **4.1-2**).

Under existing conditions, the barren playa can be described as gray to tan to white with surrounding areas of brighter white. Partially vegetated areas adjacent to and outside the historic lake bed appear darker in coloration.

4.1.3 Significance Criteria

The proposed project would have a significant impact on aesthetics if it (State CEQA Guidelines, Appendix G):

- Substantially degraded the existing visual character or quality of the site and its surroundings.

4.1.4 Impacts

The following analysis considers impacts from installation of dust control on 3.1 square miles of the Phase 7a area and transition of 3.4 square miles of existing Shallow Flooding to a mix of BACM to conserve water (original Phase 7a Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see Section 5) which will reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. Since the Avoidance Alternative would result in less impacts than the original Phase 7a Project, the following analysis presents a worst-case impact assessment.

Under the Phase 7a project, views of approximately 2.8 square miles of the lake bed that are currently primarily barren playa (DCAs T1A-3, T1A-4, T32-1, T37-1 and T37-2) will be altered by construction of Shallow Flooding, Managed Vegetation and Gravel Cover DCMs. These Phase 7a project areas are located on dry lake bed which is desert grayish to white to light brown sand with pockets of vegetation (alkali meadow and saltbush scrub). Under Phase 7a, an irrigation system will be installed in T12-1 (either surface or subsurface); the DCA is currently being tilled. Views of approximately 3.4 square miles of areas that are currently Shallow Flooding DCAs will be transitioned to a mix of Gravel Cover, Managed Vegetation, and Shallow Flooding (Transition Areas). Existing views of the Transition Areas are of standing water; although at some times of the year (July through September), water is not added to the basins.

Once installed, views of the project site will be of 0.33 square miles of Tillage, approximately 2.5 square miles of Shallow Flooding, approximately 2.1 square miles of Managed Vegetation, and approximately 1.5 square miles of Gravel Cover (**Table 4.1-1**). All areas will include access roadways and perimeter berms.

Table 4.1-1
Summary of DCM Types - Phase 7a
(square miles)

	Undisturbed[2] Playa (with limited areas of vegetation)	**Tilled Area**	**Shallow Flooding[1]**	**Managed Vegetation**	**Gravel Cover**
Existing Conditions within Phase 7a areas	2.8	0.3 (former moat and row test area)	3.4	--	--
Future Conditions with Phase 7a Project	0	0.3	2.5	2.1	1.5
Change	-2.8	0	-0.9	+2.1	+1.5

1 Existing DCA T30-1_a is designated as Shallow Flooding but also currently contains approximately 0.56 square miles of wet alkali meadow; this vegetated area will be maintained under the Phase 7a project.

2 T32-1 (0.17 sq mi) was previously disturbed as a moat and row test area.

Figure 4.1-1
Owens Lake Aerial View

Figure 4.1-2
Owens Lake View of T37-1 from Highway 395

4.1.4.1 Gravel Cover

Based on detailed design, the total Gravel Cover area proposed under Phase 7a has been reduced as compared with the description in the NOP. A total of 1.5 square miles of Gravel Cover is now proposed including the entire area of T1A-3, approximately 70 percent of T37-1, approximately 20 percent each of T28N and T28S, and all of T35-1 and T35-2. Gravel Cover areas will potentially use gravel from different sources.

Range of Gravel Color. Both of the potential gravel sources produce rock with a wide range of colors. Samples from the F.W. Aggregate Dolomite mine (Durability Quarry) and the LADWP Shale pit were washed, dried, and sorted (by group) into color groupings according to the Geological Society of America Rock-Color Chart (GSA, 1991). The color distribution of the samples (**Figure 4.1-3)** illustrates the range of colors observed; both of the mines produce rock grouped as “very light” as well as material that was medium gray. Gravel from the dolomite also includes white rock, and overall is lighter in appearance than the shale which ranges to medium dark gray. **Figure 4.1-4** provides a photographic comparison of playa color to gravel which highlights the similarity of the gray and tan tones of existing playa conditions with Dolomite gravel.

Per the terms of the MOA between LADWP and GBUAPCD (1998), gravel used for dust control on Owens Dry Lake shall be comparable in coloration to the lake bed soils. Consistent with this requirement, shale and/or dolomite will be used that is complementary in color with the underlying lake bed and surrounding landscape to the maximum extent feasible.

At the distance from the roadway, post-project views of the Gravel Cover areas are predicted to be extremely similar to existing conditions and within the range of the lake bed’s variable color palette. The existing views of the T35-1 and T35-2 ponds are of a man-made linear water feature clearly differentiated from the playa. Implementation of Gravel Cover in these two DCAs will remove these engineered, less natural looking features, a beneficial effect. Gravel Cover in the T35 DCAs and T37-1 will appear as an expansion of the Gravel Cover recently installed under Phase 8 (**Figure 4.1-5**). Overall, the Phase 7a DCAs in this area will equal a 20 percent expansion of the Gravel Cover area proposed under Phase 8 (0.4 square miles of Gravel Cover in T37-1, T35-1 and T35-2 plus 2 square miles of Gravel Cover in Phase 8). Gravel Cover using material reflecting the range of naturally occurring colors of the lake playa will assist in preserving the visual continuity of the lake bed expanse. Additionally, 43 acres of sprinkler-irrigated shrub-dominated Managed Vegetation is proposed for T37-1. The vegetation will be along the northern and western perimeter of the DCA, visually blending with existing vegetation between the lake bed and Highway 395.

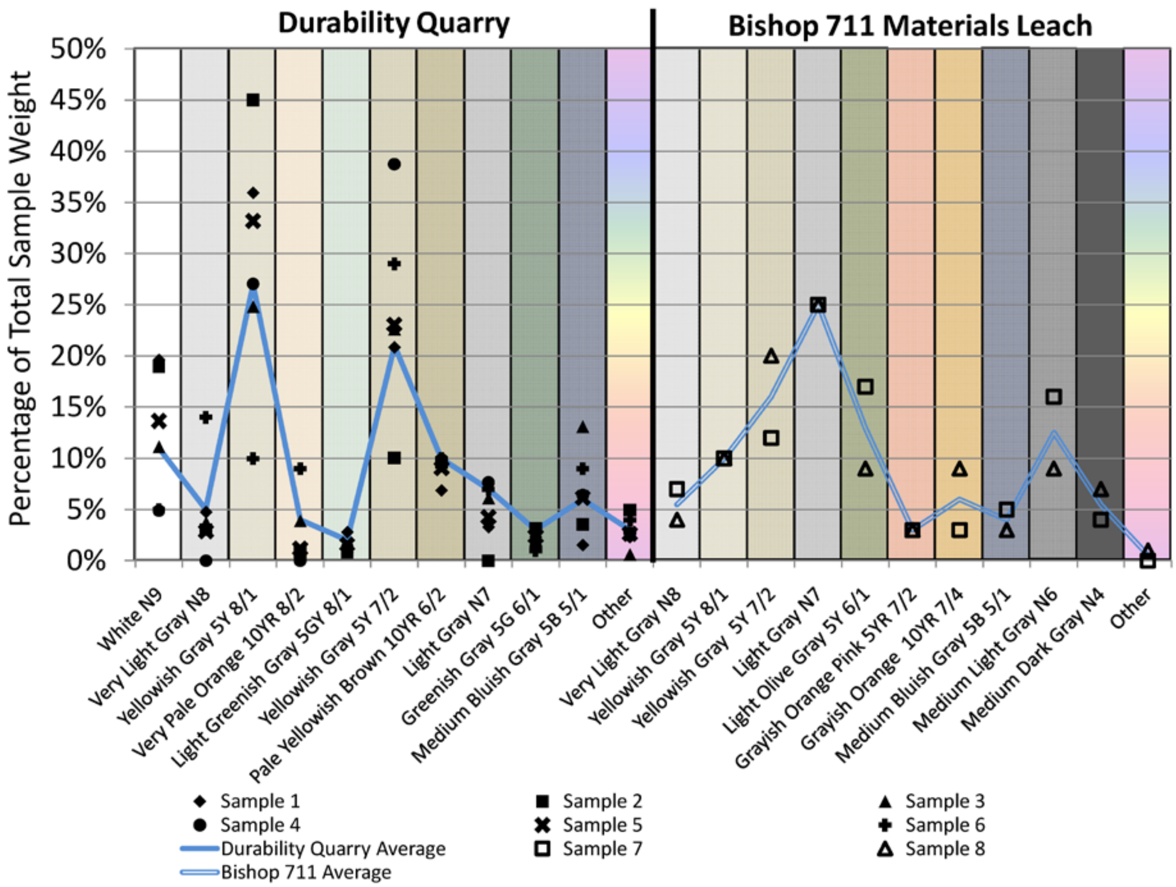


Figure 4.1-3
Color Distribution for Local Gravel

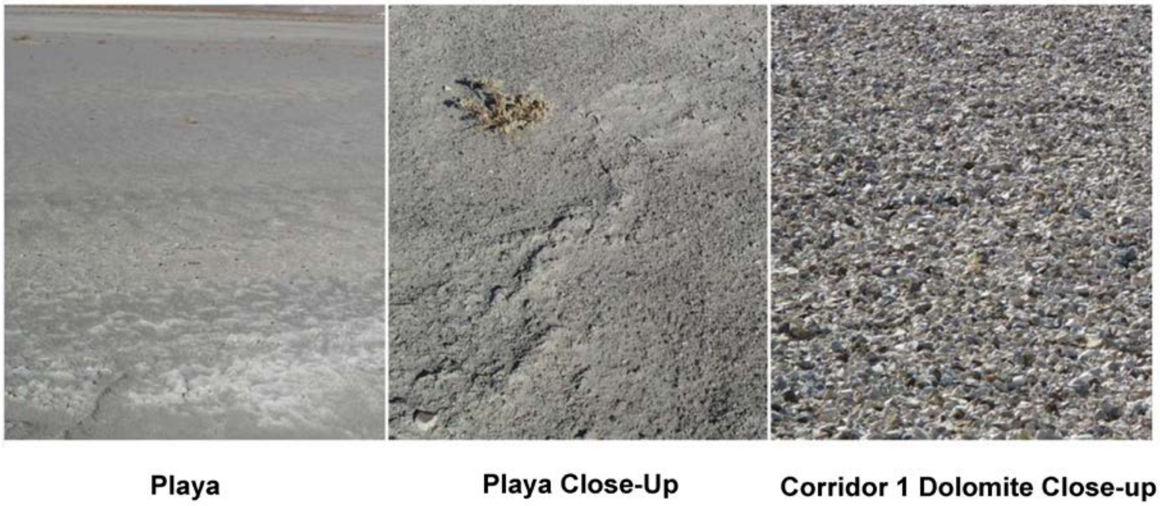


Figure 4.1-4
Dolomite Gravel and Playa Color Comparison

Figure 4.1-5
Aerial View of Phase 8 Gravel Cover

The proposed new Gravel Cover areas will not substantially alter the elevation of the affected DCAs. Gravel will be from local sources and the color will be within the range of existing lake bed color. Therefore, installation of a 4-inch layer of gravel on the Phase 7a Gravel Cover areas will alter, but will not substantially degrade the visual character of the site. The aesthetic impact of Gravel Cover on new DCAs T1A-3 and T37-1 and Transition Areas T35-1 and T35-2 is therefore less than significant.

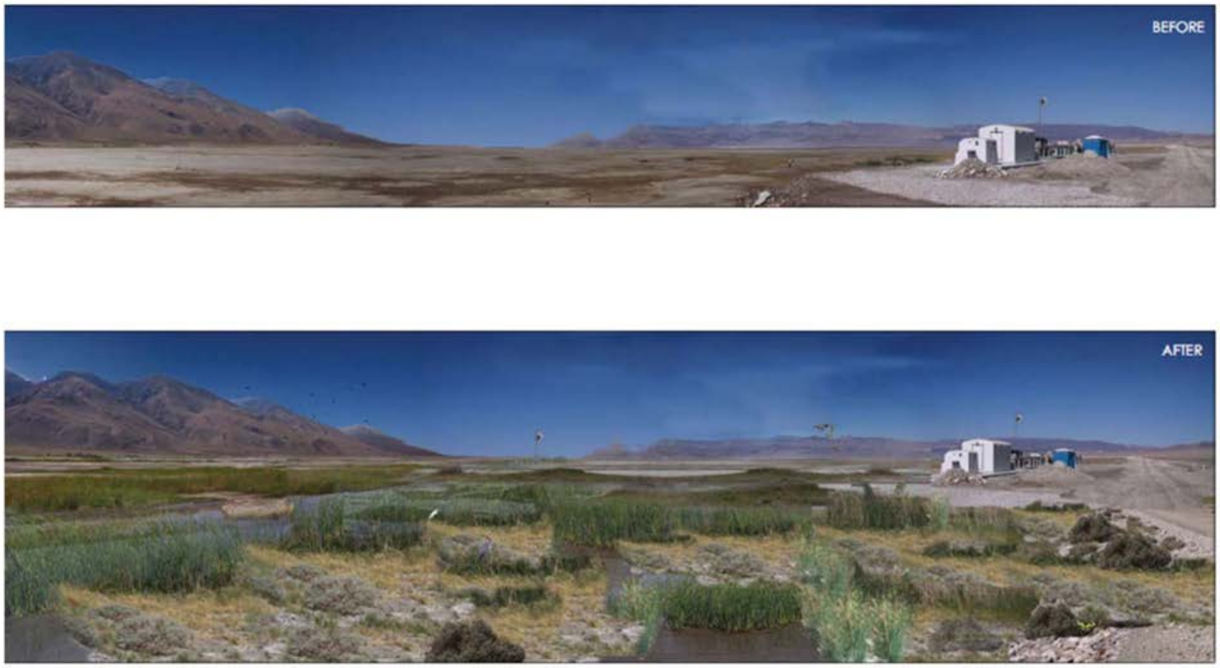
4.1.4.2 Transition Areas

Table 3-1 summarizes the total acreages in the Transition Areas by BACM type. However, the visual character of the Transition Areas will not be of a solid expanse of one DCM but instead will be a mosaic of vegetation, water and gravel (**Figures 4.1-6** and **4.1-7**). Instead of a vast expanse of one BACM, the Transition Areas have been individually designed, with variable edges and transitions among areas of vegetation, gravel and water. BACM Hybrid design will include the following elements which will create visual variations (color, shape, vertical relief) within each Transition Area:

- Pond areas
- Saturated soil areas
- Taller, shrub vegetation
- Lower, meadow vegetation
- Broad beds with furrows
- Groupings of boulders near edges of the gravel cover and in proximity to existing shrub growth
- Meandering edges and transitions to soften the historically straight lines of the berm roads and ponding areas
- Variations in rock size and color for Gravel Cover areas

Implementation of DCMs on the lake has altered the views of the lake bed from dry playa with fluctuating sized brine pool to a managed system of bermed areas of water and vegetation and roadways. Due to the distance from off-lake viewers and the size of the Phase 7a areas in relation to the overall 110-square-mile lake bed, views of the Phase 7a areas with additional gravel, vegetation, and shallow flooding installed will not change the dramatic backdrop or natural feel of the overall landscape of Owens Dry Lake. The Phase 7a project will expand the area of DCAs on the lake – which will alter the visual character of the site. The impact is less than significant, however, since it will be visually consistent with existing conditions. Additionally, Phase 7a will improve the appearance of 3.15 square miles of existing Shallow Flooding areas by increasing the number of dust control methods used within one parcel and thereby varying the landscape and increasing the overall acreage of vegetation.

Within the context of the existing views of DCMs on the lake, the variations proposed under the BACM Hybrid concept will improve the aesthetics of the existing Transition Areas; the effect is beneficial.



Source: AHBE, et. al, 2011.

Figure 4.1- 6
Phase 7a T1A-2_a Rendering

Source: AHBE, et. al, 2011.

Figure 4.1- 7
Phase 7a T28N/S Rendering

4.1.5 Mitigation Measures

Since no significant impacts have been identified, no mitigation measures are required. However, CSLC will review the proposed design for the Transition Areas for impacts on visual character of the site prior to issuing a lease for the Phase 7a project. Additionally, although the color of the gravel proposed for use for the Phase 8 project has been approved by CSLC (C. Fossum, pers. comm. 2011), it is acknowledged that additional review of gravel application and color for the Phase 7a project areas will be conducted.

Section 4.2
Air Quality

4.2 AIR QUALITY

Based on the information presented in the Initial Study for the Phase 7a project (**Appendix A**), LADWP determined that the project could have the potential to significantly impact air quality as related to the applicable air quality and greenhouse gas reduction plans, violation of air quality standards, cumulative net increases in criteria pollutants, and greenhouse gas emissions. Therefore, the impact of the proposed project on air quality and greenhouse gas emissions has been carried forward for detailed analysis in this EIR. As described in the Initial Study, the project will not expose sensitive receptors to substantial pollutant concentrations or create objectionable odors affecting a substantial number of people. Therefore, these topics are not discussed further in this EIR.

4.2.1 Resource Overview

4.2.1.1 Criteria Pollutants

Air quality is defined by ambient air concentrations of specific pollutants determined by the United States Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. Seven major pollutants of concern, called "criteria pollutants," are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 microns in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants. Areas that violate a federal air quality standard are designated as non-attainment areas.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million [ppm] by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, Pb, and some particulates, are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (for example, abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, emissions that are considered "precursors" to secondary pollutants in the atmosphere (such as reactive organic gases [ROG] and oxides of nitrogen [NOx], which are considered precursors for O_3), are the pollutants for which emissions are evaluated to control the level of O_3 in the ambient air.

Existing air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. Pollutants are defined as two general types: (1) "criteria" pollutants and (2) toxic compounds. Criteria pollutants have national and/or state ambient air quality standards. The USEPA establishes the NAAQS, while the California Air Resources Board (CARB) establishes the state standards, termed the California Ambient Air Quality Standards (CAAQS). The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except the annual standards, which may never be exceeded. The CAAQS represent maximum acceptable pollutant concentrations that are not to be equaled or exceeded.

4.2.1.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are substances that have the potential to be emitted into the ambient air and that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources.

4.2.1.3 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere. The global warming potential rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a global warming potential of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its global warming potential and adding the results together to produce a single, combined emission rate representing all GHGs. On a national scale, federal agencies are addressing emissions of GHGs by reductions mandated in federal laws and Executive Orders. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the

California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020.

Assembly Bill (AB) 32, California Global Warming Solutions Act of 2006, was signed into law on September 27, 2006. AB 32 requires CARB, in coordination with State agencies as well as members of the private and academic communities, to adopt regulations to require the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with this program. Under the provisions of the bill, by 2020, statewide greenhouse gas emissions will be limited to the equivalent emission levels in 1990. On December 12, 2008, CARB adopted its Climate Change Scoping Plan pursuant to AB 32 (CARB, 2008a). The Scoping Plan was re-approved by CARB on August 24, 2011. The scoping plan indicates how these emission reductions will be achieved from significant greenhouse gas sources via regulations, market mechanisms and other actions.

The potential effects of proposed GHG emissions are by nature global, and have cumulative impacts. As individual sources, project GHG emissions are not large enough to have an appreciable effect on climate change. Therefore, the impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts.

As a power utility, the majority of LADWP's GHG emissions results from power generation. As with the Phase 7a project, other GHG emissions are a result of vehicle and equipment use for construction and operation of LADWP facilities. To reduce Department-wide GHG emissions, LADWP has instituted various programs including: increasing the use of renewable energy by 33 percent by 2020, early divestiture of coal generation, repowering existing natural gas power plants, adopting an aggressive energy efficiency program, and use of electric fleet vehicles.

4.2.2 Regulatory Framework

The Federal Clean Air Act (CAA) and its subsequent amendments establish air quality regulations and the NAAQS and delegate the enforcement of these standards to the states. In California, the CARB is responsible for enforcing air pollution regulations. The CARB has in turn delegated the responsibility of regulating stationary emission sources to regional air agencies. In the Great Basin Valleys Air Basin, the Great Basin Unified Air Pollution Control District (GBUAPCD) has this responsibility. The CAA establishes air quality planning processes and requires areas in nonattainment of a NAAQS to develop a State Implementation Plan (SIP) that details how the state will attain the standard within mandated time frames. The requirements and compliance dates for attainment are based on the severity of the nonattainment classification of the area. The national and state ambient air quality standards are shown in **Table 4.2-1**. In California, the CARB is responsible for enforcing both the federal and state air pollution standards.

Table 4.2-1
National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards [a] Primary [b,c]	National Standards [a] Secondary [b,d]
Ozone (O_3)	8-hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)	Same as primary
	1-hour	0.09 ppm (180 µg/m^3)	—	—
Carbon monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
Nitrogen dioxide (NO_2)	Annual	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as primary
	1-hour	0.18 ppm (338 µg/m^3)	100 ppb	—
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	—	—
	3-hour	—	—	0.5 ppm (1,300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	—
PM_{10}	Annual	20 µg/m^3	—	—
	24-hour	50 µg/m^3	150 µg/m^3	Same as primary
$PM_{2.5}$	Annual	12 µg/m^3	12 µg/m^3	15 µg/m^3
	24-hour	—	35 µg/m^3	Same as primary
Lead	Rolling 3-month avg	—	0.15 µg/m^3	Same as primary
	30-day average	1.5 µg/m^3	—	—
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	—	—

Source: CARB, 2012

Notes:

[a] Standards other than the 1-hour ozone, 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages are not to be exceeded more than once a year. The 8-hour ozone national standard has replaced the 1-hour ozone national standard.

[b] Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

[c] Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

[d] Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

The following summarizes the air quality rules and regulations that apply to the Owens Lake area.

4.2.2.1 Federal Regulations

Section 176(c) of the CAA, as articulated in the USEPA General Conformity Rule, states that a federal agency cannot issue a permit for or support an activity unless the agency determines that it will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not (1) cause or contribute to any new violation of a NAAQS, (2) increase the frequency or severity of any existing violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. GBUAPCD Regulation 13 implements the USEPA's General Conformity Rule. Within the Coso Junction area of the Great Basin Valleys Air Basin, if net annual emissions of PM_{10} increase by less than 100 tons, a CAA conformity determination is not required. Within the Owens Valley area, the de minimis threshold is 70 tons per year of PM_{10} because that area is classified as a serious nonattainment area for PM_{10}. If emissions of PM_{10} in these areas exceed the de minimis threshold, the BLM must demonstrate conformity under one of the methods prescribed by GBUAPCD Regulation 13. LADWP anticipates requesting an amendment to existing Clean Water Act Section 404 permit SPL-2008-00582-BAH from the U.S. Army Corps of Engineers for Phase 7 to include construction, operations, and maintenance associated with Phase 7a. However, based on past practices, LADWP does not expect the Army Corps to assume jurisdiction over the project. No other federal approvals are anticipated. The conformity requirement is therefore not triggered. If the Army Corps asserts jurisdiction, an appropriate analysis will be made.

4.2.2.2 State Regulations

The CARB has oversight over air quality in the state of California. Regulation of individual stationary sources has been delegated to local air pollution control agencies. The CARB is responsible for developing programs designed to reduce emissions from non-stationary sources, including motor vehicles and off-road equipment.

The CARB and the California Office of Environmental Health Hazard Assessment (OEHHA) are also responsible for developing regulations governing TACs. The CARB and OEHHA identify specific air pollutants as TACs, develop health thresholds for exposure to TACs, and develop guidelines for conducting health risk assessments for sources of TAC emissions.

4.2.2.3 Local Regulations

Owens Lake is located in the jurisdiction of the GBUAPCD. The GBUAPCD is responsible for regulating stationary sources of air emissions in the area. Stationary sources, such as geothermal plants, that have the potential to emit air pollutants into the ambient air are subject to the Rules and Regulations adopted by the GBUAPCD.

As part of the PM_{10} attainment planning process in the Owens Lake area, the GBUAPCD has adopted the *2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan* (GBUAPCD, 2008a). The focus of this air quality plan is implementation of dust control measures (DCMs) at Owens Dry Lake, which is the major particulate matter source in the Valley. The SIP demonstrates how the NAAQS will be attained and maintained.

In July 1998, LADWP and GBUAPCD entered into a Memorandum of Agreement (MOA) to mitigate the dust problem (LADWP and GBUAPCD, 1998). Since 2001, LADWP has implemented BACM on areas of Owens Lake playa that have been designated as emissive by GBUAPCD.

The Public Safety Element of the Inyo County General Plan contains policies related to air quality (Inyo County, 2001), including the following policies relevant to the Phase 7a project:

- **Policy AQ-1.1: Regulations to Reduce PM_{10}**. Support the implementation of the State Implementation Plan and the agreement between GBUAPCD and the LADWP to reduce PM_{10}.
- **Policy AQ-1.2: Attainment Programs**. Participate in the GBUAPCD's attainment programs.
- **Policy AQ-1.3: Dust Suppression During Construction**. Require dust-suppression measures for grading activities. Under Implementation Measure 4.0, the County shall require contractors to implement dust suppression measures during excavation, grading, and site preparation activities. Techniques may include, but are not limited to the following: site watering or application of dust suppressants, phasing or extension of grading operations, covering of stockpiles, suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour), and revegetation of graded site.

4.2.3 Existing Conditions

4.2.3.1 Regional Climate

Climatological data for Independence, California for the period from January 1, 1893 to December 31, 2010 are representative of conditions at Owens Lake. The Independence monitoring station measures temperature, precipitation (including snowfall), heating degree days, and cooling degree days. Monthly average temperatures and precipitation for the Owens Lake are summarized in **Table 4.2-2**.

The project area is located within the Owens Valley Planning Area. Air quality in Inyo County is administered by the GBUAPCD.

The climate of the Owens Lake area is classified as high desert climate characterized by dry, hot summers and cool winters. The major influences on the regional climate are the Eastern Pacific high pressure system, the Sierra Nevada mountain range to the west, and the mountain ranges to the east of the project location.

Table 4.2-2
Monthly Average Temperatures and Precipitation – Independence Meteorological Station

Month	Temperature, °F		Precipitation, Inches
	Minimum	Maximum	Measurement
January	27.5	54.1	1.00
February	31.3	58.1	1.03
March	36.4	65.6	0.45
April	42.4	72.8	0.24
May	50.7	81.9	0.16
June	58.7	91.3	0.11
July	64.1	97.8	0.13
August	61.9	95.9	0.13
September	54.9	88.5	0.19
October	45.0	76.9	0.25
November	34.2	64.1	0.56
December	28.1	54.3	1.01
Annual	44.6	75.1	5.26

Source: Desert Research Institute, 2011

The GBUAPCD operates a series of ambient air quality monitoring stations throughout the Great Basin Valleys Air Basin. The only monitoring station in the Great Basin Valleys that measures O_3 is located in Death Valley National Park to the east of the site. O_3 concentrations at the Death Valley monitoring station are likely to be representative of site conditions, as O_3 levels are most likely the result of transport rather than localized emissions, and O_3 is considered a basin-wide pollutant. The only monitoring station in the Great Basin Valleys that measures $PM_{2.5}$ is located at Keeler, near Owens Lake. Hydrogen sulfide is monitored in the Coso Junction area due to concerns regarding emissions from geothermal plants. CO, NO_2, and SO_2 are not monitored within the Great Basin Valleys Air Basin and are not considered to be of concern with regard to attainment of the ambient air quality standards.

Table 4.2-3 provides a summary of background air quality data for Owens Lake.

Table 4.2-3
Air Quality Data for the Owens Lake Area (2007-2011)

Air Quality Indicator	2007	2008	2009	2010	2011
Ozone (O_3)[(1)]					
Peak 1-hour value (ppm)	0.107	0.098	0.098	0.081	0.084
Days above state standard (0.09 ppm)	3	1	1	0	0
Peak 8-hour value (ppm)	0.094	0.094	0.086	0.076	0.079
Days above state standard (0.070 ppm)	35	21	4	2	20
Days above federal standard (0.075 ppm)[(2, 6)]	18	5	2	1	3
Particulate matter less than or equal to 10 microns in diameter (PM_{10})[(3)]					
Olancha Monitoring Station					
Peak 24-hour value ($\mu g/m^3$)	114	357	650	577	779
Days above state standard (50 $\mu g/m^3$)	2	*	2	*	*
Days above federal standard (150 $\mu g/m^3$)	0	5	0	5	4
Annual Average value (ppm)	21.5	22.3	19.6	23.1	23.3
Dirty Socks Monitoring Station					
Peak 24-hour value ($\mu g/m^3$)	497	499	555	1437	914
Days above state standard (50 $\mu g/m^3$)	10	*	*	*	*
Days above federal standard (150 $\mu g/m^3$)	2	9	7	13	8
Annual Average value (ppm)	14.1	25.7	25.0	37.6	23.6
Lone Pine Monitoring Station					
Peak 24-hour value ($\mu g/m^3$)	97.3	273.1	312.4	148.1	191
Days above state standard (50 $\mu g/m^3$)	*	*	*	*	*
Days above federal standard (150 $\mu g/m^3$)	0	5	3	0	2
Annual Average value (ppm)	18.5	18.4	17.7	16.4	17.7
Particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$)[(4)]					
Peak 24-hour value ($\mu g/m^3$) [(5)]	57	58	69	106.2	208
Days above federal standard (35 $\mu g/m^3$)	2	4	4	5	10
Annual Average value (ppm)	5.8	7.1	6.8	7.1	8.2
Hydrogen Sulfide (H_2S)[(7)]					
Peak 1-hour value (ppm)	0.003	0.003	0.006	0.005	0.005
Days above state standard (0.03 ppm)	0	0	0	0	0

Notes: [(1)] Data from the Death Valley monitoring station.
[(2)] The federal O_3 standard was revised downward in 2008 to 0.075 ppm.
[(3)] Data from the Olancha monitoring station.
[(4)] Data from the Keeler monitoring station.
[(5)] The federal $PM_{2.5}$ standard was revised downward in 2007 to 35 $\mu g/m^3$.
[(6)] The federal eight-hour ozone standard was previously defined as 0.08 ppm (1 significant digit). Measurements were rounded up or down to determine compliance with the standard; therefore a measurement of 0.084 ppm is rounded to 0.08 ppm. The 8-hour ozone ambient air quality standards are met at an ambient air quality monitoring site when the average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than or equal to the standard.
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; * = not available
Source: CARB, 2011.

4.2.3.2 Compliance with Air Quality Standards

The Great Basin Valleys Air Basin is considered an unclassified/attainment area for the NAAQS for O_3, CO, NO_2, $PM_{2.5}$, and SO_2. In the Owens Lake area, the Owens Valley is classified as a serious nonattainment area for the NAAQS for PM_{10}. The dust control measures proposed in this project are part of the 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (GBUAPCD, 2008b).

The USEPA is proposing to lower the 8-hour O_3 standard to a lower level within a range of 0.060 to 0.070 ppm. The ambient air monitoring station at Death Valley measures 8-hour O_3 concentrations above this level, and its 3-year average 8-hour O_3 concentration is 0.081 ppm. This level is above both the current standard and the proposed lower standard for O_3. In January 2009, the GBUAPCD recommended to CARB that southeast Inyo County be redesignated as an O_3 nonattainment area, as 65 exceedances of the 8-hour NAAQS of 0.075 ppm were recorded. CARB has recommended to the USEPA that the region be redesignated as an O_3 nonattainment area. Should this occur, the GBUAPCD will be required to develop an air quality management plan for O_3.

The Great Basin Valleys Air Basin is considered an unclassified/attainment area for the CAAQS for CO, NO_2, $PM_{2.5}$, and SO_2. Inyo County is considered an unclassified area for the 1-hour CAAQS for O_3, but Mono and Inyo Counties are classified as nonattainment areas for the 8-hour CAAQS for O_3. The air basin is a nonattainment area for the CAAQS for PM_{10}.

4.2.4 Significance Criteria

According to State CEQA Guidelines, Appendix G VI(c), a project would be considered to have a significant impact on air quality if it:

a) Conflicts with or obstruct implementation of the applicable air quality plan.
b) Violates any air quality standard or contributes substantially to an existing or projected air quality violation.
c) Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
d) Exposes sensitive receptors to substantial pollutant concentrations.
e) Creates objectionable odors affecting a substantial number of people.

Project-related greenhouse gas emissions are considered to be significant if they:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

LADWP used the SCAQMD and CARB thresholds of significance to assess greenhouse emissions related to the project.

4.2.5 Impacts

The following subsections address these significance criteria.

4.2.5.1 Consistency with the 2008 SIP

The history of the air quality planning process is summarized in the 2008 SIP EIR (GBUAPCD, 2008b). In 1987, the USEPA designated the Owens Valley Planning Area as nonattainment for the NAAQS for PM_{10}. The result of this designation was a plan designed to improve air quality through the reduction of PM_{10} emissions in all of the communities in the Owens Valley (the 1998 SIP). Under this plan, LADWP began implementing DCMs on the lake bed with the goal of meeting the federal PM_{10} standards by the end of 2006. A revised SIP in 2003 called for LADWP to implement DCMs on 29.8 square miles of the Owens lake bed by December 31, 2006. The 2008 SIP includes 15.1 square miles (9,664 acres) of supplemental dust control areas (12.7 square miles), channel area that may require DCMs (0.5 square mile), and of study area (1.9 square miles). Of the 15.1 square miles identified in the 2008 SIP, 10.1 square miles have been constructed as part of Phase 7. The 2008 SIP's attainment strategy provides that control of 43 square miles of the Owens Lake bed will result in the OVPA achieving attainment of the PM_{10} NAAQS by 2017.

As a result of delays outside LADWP's control, LADWP and GBUAPCD entered into an Abatement Order that led to the Phase 7a Project. The Abatement Order called for installation of dust control on approximately 3.1 square miles on areas identified in the Order as "Phase 7a areas." LADWP has the discretion to select BACM, or conduct testing of new or modified BACM, on up to one-third (0.33) square mile of the Phase 7a study area, specifically in DCA T12-1. The Abatement Order also states, that in order to decrease water use on Owens Lake, up to 3.0 square miles of existing Shallow Flood controls may be transitioned to any combination of BACM in order to provide a water supply for new dust controls. The Abatement Order expressly acknowledges that during construction of the Transition Areas, the Transition Areas may not be compliant at all times with the BACM requirements in Governing Board Order No. 080128-01 and, thus, LADWP is required to take "Reasonable Precautions" to control emissions to the extent practicable during construction of the Transition Areas pursuant to an approved Dust Control Plan.

Implementation of the Phase 7a project will result in the installation of dust control on approximately 3.1 additional square miles of the lake, less the approximately 350 acres that will be excluded to protect cultural resources (under the Avoidance Alternative, **Section 5**), and transition of 3.4 square miles of existing Shallow Flooding DCAs to a mix of BACM. The project also includes: construction of three new turnout facilities and modification to four existing turnout facilities; irrigation and drainage systems and other infrastructure to support Shallow Flooding, Managed Vegetation and Tillage; construction of public amenities such as trails, boardwalks, and visitor outlooks; installation or reconfiguration of DCA berms; improvement of an access road; re-routing of the existing Lake Minerals Road to the new T1A-4 perimeter berm; and, construction of a new water supply pipeline; construction of an access road;

construction of turn out facilities; installation of an irrigation system to support on-going tillage; installation or reconfiguration of berms on areas immediately adjacent to DCAs; and, construction of a water supply pipeline. The Abatement Order can be modified to address any necessary changes to the project that was anticipated in the Order.

Phase 7a dust controls are also expected to achieve a 99 percent control efficiency, which exceeds the control efficiencies called for in the 2008 SIP and Board Order 080128-01 for some BACM.

Also, in order to secure a variance to cover the delays for the Phase 7 project that were outside LADWP's control (which also led to the Phase 7a project, discussed above), GBUAPCD required LADWP to install dust controls on an additional 2.03 square miles of Owens Lake. This project, known as Phase 8, consists of 2.03 square miles of Gravel Cover, and was not required as part of the 2008 SIP attainment strategy. Therefore, LADWP has committed to controlling dust on approximately 45 square miles of Owens Lake, 2 miles more than was required in the 2008 SIP for the OVPA to reach attainment.

The sequence of relevant GBUAPCD and CSLC actions is as follows:

- **January 2008** - Governing Board Order 080128-01 requires the City to implement BACM in 13.2 square miles of Owens Lake; the area is identified as Phase 7.
- **September 2009** - Variance Order GB09-06 provides the City of Los Angeles with additional time (from October 1, 2009 to October 1, 2010) to implement PM_{10} controls in 3.5 square miles of the 13.2 square miles identified in Board Order 080128-01. [approximately 3 square miles of this area are identified as Phase 7a.]
- **December 2009 –** CSLC approved a lease for construction of 0.4 square miles of sand fence in Area T1A-1 out of the proposed 3.5 square miles of Moat and Row.
- **April 2010** - CSLC denies the City's application for a lease for the proposed Moat and Row dust control on the approximately 3 square miles of Phase 7a.
- **October 2010** - The Air Pollution Control Officer issues an Notice of Violation (NOV number 471) because the controls were not implemented in the Phase 7a areas by the October 1, 2010 deadline identified in GB09-06.
- **December 2010 –** Order 101206-01 requires the City to implement BACM on 2.03 square miles in an area identified as Phase 8. [Approximately 0.65 square miles of the Phase 8 areas overlaps with the 15.1 square miles of DCMs described in the 2008 SIP.] The Phase 8 project was an additional requirement of GB09-06 and was not contemplated in the 2008 SIP. The Phase 8 project, which consists of 2.03 square miles of Gravel Cover, was completed by the November 2012 deadline.
- **March 2011** - Governing Board Order 110317-01 (the Abatement Order) requires implementation of BACM on the approximately 3 square miles of Phase 7a and on approximately 3 square miles of Transition Areas. Except for the T12-1 BACM test area (Tillage test area), Order 110317-01 requires BACM control to be installed and operational by December 31, 2013. Phase 7a areas controlled by Managed Vegetation are to be fully-compliant by December 31, 2015. The LADWP Board of Commissioners has since adopted four resolutions stating that LADWP's ability to install dust control by the

deadlines in the Abatement Order may not be feasible as the result of circumstances beyond its control.

The Phase 7a project will be implemented in compliance with the relevant air quality plan for the project area, the Final 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (GBUAPCD, 2008a), as modified by applicable GBUAPCD Orders, including Order 110317-01 (the Abatement Order). GBUAPCD mandated dust controls on the project areas (Phase 7a DCAs and Transition Areas), and as discussed above, the Abatement Order provides that the Transition Areas are not required to meet dust control requirements at all times during construction. LADWP is required to take "Reasonable Precautions" to control emissions to the extent practicable during construction of the Transition Areas pursuant to an approved Dust Control Plan. A variance from GBUAPCD is not required. The Abatement Order defines the Transition Areas as, "up to 3.0 square miles of existing Shallow Flood controls". The proposed project includes 3.4 square miles of Transition Area. Therefore, the Dust Control Plan for construction of the Transition Areas will be developed for the larger area. If necessary, LADWP will transition 0.4 square miles of existing Shallow Flooding during the dust off season (July to September) and will phase its construction so that no more than 3.0 square miles are being transitioned at a time. Since the proposed project will be implemented in compliance with the SIP as modified by the relevant GBUAPCD Orders, the project is consistent with the applicable air quality plan for the project area and impacts on the air quality plan will be less than significant.

4.2.5.2 Construction and Operations Emissions

The following analysis considers impacts from installation of dust control on 3.1 square miles of the Phase 7a area and transition of 3.4 square miles of existing Shallow Flooding to a mix of BACM to conserve water (original Phase 7a Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which will reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. Since the Avoidance Alternative would result in less impacts than the original Phase 7a Project, the following analysis presents a worst-case impact assessment.

Emissions during project construction activities will result from the operation of heavy equipment (dozers, dump trucks, flatbed trucks, backhoes, tractors, etc.), vehicles (including truck traffic and worker vehicles), and from fugitive dust generated by construction activities. Emissions from heavy equipment used in construction for the project were estimated based on emission factors for the South Coast Air Basin (SCAB) from CARB's OFFROAD2007 Model (CARB 2007a), as published on the South Coast Air Quality Management District's (SCAQMD) website. Emission factors for 2012 represent the average fleet emissions throughout the SCAB and were considered representative of construction equipment that would be in use during construction of the project. Emissions from worker travel and truck traffic were calculated using CARB's EMFAC2007 Model (CARB 2007b) for on-road vehicles. Emissions of fugitive dust were estimated based on SCAQMD and USEPA emission factors.

Heavy equipment requirements were based on estimated equipment used for the following DCMs:

(a) Shallow Flooding areas – turnout facilities
(b) Shallow Flooding areas
(c) Managed Vegetation areas
(d) Gravel Cover installation
(e) Tillage

Tables 4.2-4 summarizes the construction equipment and workforce needed for the various construction activities. Equipment, truck, and workforce assumptions used in the emission calculations are detailed in **Appendix D**.

Table 4.2-4
Estimated Construction Activities and Equipment for Phase 7a Construction

Activities	Equipment Types	Personnel
Turnout Facilities Associated with Shallow Flood Areas		
Earthen Pad Construction Mainline Connection Submain and Header Installation Underground Electrical Conduit Installation Subgrade Preparation Construct Concrete Pads Install Above Grade Piping, Electrical Equipment, Mechanical Equipment, and miscellaneous items Install wiring and terminate Install heat trace and pipe insulation Calibrate Instruments and startup testing	Dozers Excavators Backhoes Dump trucks Vibratory Roller Compactors Vactor Trucks Flatbed trucks Wacker Compactor Grader Ready Mix Trucks Utility crew trucks Step Van Tool Trucks Utility Truck Telehandler Forklift Boom Truck	Operators Truck drivers Laborers HDPE Fuse Machine Operators Electricians Coaters Mechanics Welders Technicians
Shallow Flood Areas		
HDPE Submain and Flush Pipe Installation Drain Line HDPE Laterals and Risers Installation High Voltage Cable Miscellaneous Concrete Structures	Trenchers Excavators Dozers Scrapers Trucks Portable diesel generators Tractors Pressure Washers (truck) HDPE Fusing Machine Quads Backhoes Dump Trucks Ready Mix Trucks Motor Grader	Operators Fuse Machine Operators Drivers Laborers Electricians

Activities	Equipment Types	Personnel
	Loaders Wacker Compactor	
Managed Vegetation Areas		
Excavation, Soil Conditioning, and Land Leveling Road Road Base Course and Armoring HDPE Laterals and Risers Installation Flushing and Testing Seeding and Planting	Dozers Farm Tractors Quad Tractors with Scraper Motor Graders Skid Steers Dump Trucks Loaders Trenchers Scrapers Trucks HDPE Fusing Machine Quads Diesel generator – 50 hp Seeding Machine (small tractor)	Operators Drivers Laborers Fuse Machine Operators
Gravel Installation		
Staging Area Preparation Access Roadways Gravel delivery to stockpile Gravel delivery from stockpile to DCM area	Dozers Scrapers Dump trucks (5-10 cu yd LGP) Loaders Flatbed trucks Backhoes, farm tractors, or dozers for geotextile D6 Dozers for gravel	Operators Drivers Grounds workers Water truck operators Fuel truck drivers
Tillage		
Riprap Reinforcement of Existing Berm HDPE Laterals and Risers Installation Flushing and Testing Tillage	Tractors Trenchers Dozers Scrapers Trucks HDPE Fusing Machine Quads Dump Truck Loaders Grader	Operators Fuse Machine Operator Drivers Laborers
All		
Dust suppression Fueling Inspections	Water truck Fuel trucks Light duty trucks	Drivers Inspectors

Table 4.2-5 presents the worst-case, peak day emission estimates for the construction activity, based on the following assumptions:

- The construction period is assumed to be 18 months, with work occurring 5 days per week (for a total of 390 workdays).
- Work to occur up to 12 hours per day; equipment operational from 2 to 8 hours per day
- 40 acres per work area would be disturbed on a daily basis, and up to five work areas would be disturbed at any one time. A total of approximately 200 acres would be disturbed at any one time.
- Gravel haul trucks will transport gravel from either the F.W. Aggregate Dolomite Mine or the LADWP Shale Pit. An average distance of 11.36 miles one way was assumed for the travel distance.
- Delivery trucks, support vehicles, and worker vehicles would travel 90 miles per day round trip to the site.
- Average mileage per worker assumes 50 percent of workers are from Lone Pine (5 miles from project site), 20 percent from Ridgecrest (48 miles from project site), 20 percent from Bishop (61 miles from project site), and 10 percent from Los Angeles (200 miles from project site).
- Gravel installation period of approximately 7 months.

Table 4.2-5
Estimated Maximum Daily Construction Emissions

Source	ROG lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	PM_{10} lbs/day	$PM_{2.5}$ lbs/day
Offroad Equipment	299.71	5746.85	1266.15	2.01	134.62	119.81
Worker Trips	23.73	584.11	74.21	0.33	6.50	2.47
Construction Trucks	1.54	13.36	44.50	0.12	70.65	15.97
Fugitive Dust	-	-	-	-	1560	327.6
Total	**324.98**	**6344.31**	**1384.86**	**2.46**	**1771.77**	**465.85**

As shown in **Table 4.2-5**, construction activities would result in emissions of criteria pollutants. During construction, emission sources would be distributed among several dust control areas that are located in various parts of the Owens Lake area.

With the exception of PM_{10}, however, these emissions would not result in a net increase of any pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. Therefore, with the exception of PM_{10}, air pollutant emissions during construction will be less than significant. However, to reduce tail pipe emissions from construction and maintenance vehicles and equipment to the maximum extent feasible, mitigation measures Air-2 through Air-5 shall be implemented.

PM_{10} emissions would result from construction activities required to implement DCMs at Owens Lake. Construction activities will generate some PM_{10} emissions due to surface disturbance, creation of berms, travel of vehicles and construction equipment on unpaved surfaces, and material handling of gravel for those areas that will use gravel installation for dust control. Mitigation measure Air-1 has therefore been proposed to reduce fugitive dust generation for these activities to the extent feasible.

Because the project is intended to comply with the requirements of the SIP to implement DCMs at Owens Lake, the project is anticipated to result in an overall benefit to the air quality of the area.

Operational emissions will be associated with inspection and maintenance activities, and with periodic berm building and upkeep, upkeep on roads and turnouts, re-seeding of managed vegetation areas, and replacement of gravel in those areas where gravel is installed as a DCM. Maximum daily emissions associated with these activities would be lower than presented in **Table 4.2-5**, as they would require a subset of the equipment, vehicles, and workers required to complete.

Construction and operation impacts are less than significant. The project is consistent with the 2008 SIP as discussed in **Section 4.2.5.1** and, therefore, does not conflict with or obstruct implementation of the applicable air quality plan. The increase in construction emissions will not violate any air quality standard or contribute substantially to an existing or projected air quality violation with the implementation of mitigation measure Air-1. The project is located in an uninhabited area and, therefore, does not expose any sensitive receptors to substantial pollutant concentrations. The project also will result in any objectionable odors that would affect a substantial number of people.

4.2.5.3 Nonattainment Pollutants

As discussed above, the Owens Lake area is classified as a serious nonattainment area for PM_{10}. Also as discussed above, PM_{10} emissions would result from construction activities required to implement DCMs at Owens Lake. Mitigation measure Air-1 has therefore been proposed to reduce fugitive dust generation for these activities to the extent feasible.

Operation of the Phase 7a dust control project would reduce PM_{10} emissions from Owens Lake, which would result in a net decrease in nonattainment pollutants and a beneficial effect. Because the project is intended to comply with the requirements of the SIP to implement DCMs at Owens Lake, the project is anticipated to result in an overall reduction, rather than increase, of emissions and would therefore not result in a cumulatively considerable impact for nonattainment pollutants. Therefore, the impact is less than significant.

4.2.6 Global Climate Change

According to the California Energy Commission (CEC, 2006), carbon dioxide (CO_2) accounts for approximately 84 percent of statewide greenhouse gas emissions, with methane accounting for approximately 5.7 percent of greenhouse gas emissions and nitrous oxide accounting for another 6.8 percent of greenhouse gas emissions. Other pollutants account for approximately 2.9

percent of greenhouse gas emissions in California. The transportation sector is the single largest category of California's greenhouse gas emissions, accounting for 41 percent of emissions statewide. In 2004, California produced 431 million metric tons of total carbon dioxide-equivalent emissions (not including energy imports).

Emissions of GHG were calculated using the same approach as emissions for overall construction emissions discussed above. Estimated emissions of greenhouse gases related to construction of the Phase 7a project are summarized in **Table 4.2-6**. Emission calculations are provided in **Appendix D**.

The SCAQMD recommends that construction emissions be amortized over a 30-year period to account for the project's contribution to overall GHG emissions. If amortized over a 30-year period, construction would contribute 1,018 metric tons per year of CO_2-equivalent emissions.

Since the GBUAPCD does not have established greenhouse gas thresholds of significance, LADWP reviewed threshold defined by the SCAQMD (the air district with jurisdiction over the air basin where LADWP has its main offices) and the state-wide air resources agency, CARB. SCAQMD's interim threshold of significance for greenhouse gases for industrial projects is 10,000 metric tons CO_2-equivalent emissions per year (adopted December 5, 2008; includes construction emissions amortized over 30 years and added to operational GHG emissions). The ARB proposed a threshold of 7,000 metric tons of CO_2-equivalent emissions per year for operational emissions (excluding transportation). Predicted project greenhouse gas emissions are less than either of these thresholds and, therefore do not conflict with SCAQMD or CARB thresholds and are less than significant. The project also does not generate greenhouse gas emissions that will have a significant impact on the environment, either directly or indirectly.

Table 4.2-6
Estimated Annual GHG Emissions from Construction

Source	**CO_2 metric tons** (total)	**CH_4 metric tons** (total)	**N_2O metric tons** (total)
Offroad Equipment	12242	1.70	9.95
Worker Trips	3191	0.39	0.72
Construction Trucks	2314	0.01	0.75
Total	**17,747**	**2.10**	**11.42**
Global Warming Potential	**1**	**21**	**310**
CO_2-Equivalent Emissions	**17,747**	**44**	**3,540**
Total CO_2-Equivalent Construction-related Emissions	**21,331** metric tons		
Amortized Construction-related Emissions	**711** metric tons		

As discussed above under criteria pollutant emissions, operational GHG emissions will be associated with inspection and maintenance activities, and with periodic berm building and upkeep, upkeep on roads and turnouts, re-seeding of managed vegetation areas, and replacement of gravel in those areas where gravel is installed as a DCM. It was assumed that an additional five workers (in addition to the existing maintenance personnel headquartered in LADWP's Keeler office) would be required for continual inspection and maintenance activities. It was also assumed, for the purpose of estimating annual GHG emissions from operational activities, that two percent of the gravel would be replaced annually. Operational emissions are presented in **Table 4.2-7.**

Table 4.2-5
Estimated Annual GHG Emissions from Operation

Source	CO_2 metric tons (total)	CH_4 metric tons (total)	N_2O metric tons (total)
Offroad Equipment	74	0.01	0.05
Worker Trips	316	0.04	0.07
Construction Trucks	51	0.00	0.02
Total	**441**	**0.04**	**0.14**
Global Warming Potential	**1**	**21**	**310**
CO_2-Equivalent Emissions	**441**	**1**	**43**
Total Operational CO_2-Equivalent Emissions	**485** metric tons		
Amortized Construction Emissions	**711** metric tons		
Total CO_2-Equivalent Emissions	**1,196** metric tons		

The total emissions associated with operations and amortized construction emissions would remain below the thresholds proposed by the SCAQMD and CARB. Impacts to climate change would therefore be less than significant.

4.2.7 Mitigation Measures

Mitigation Measure Air-1 will reduce dust emissions during construction and maintenance activity to less than significant levels. Mitigation measures Air-2 through Air-5 will be implemented to reduce less than significant construction vehicle and equipment tailpipe emissions to the maximum extent practical, feasible, and available.

Air-1. Fugitive Dust Emissions Control and Minimization. In compliance with GBUAPCD Abatement Order 110317-01, a Dust Control Plan will be implemented during construction. For the Transition Areas, the plan will specify measures to be taken when removing existing DCAs from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to:

- Temporary sand fences shall be installed where feasible as soon as practicable without delaying project completion and shall be maintained as necessary until areas of Managed Vegetation have been established
- Water trucks shall be used as necessary and feasible during construction

- Tillage shall be implemented where soil conditions allow
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor
- Construction activities shall cease during high wind events

At a minimum, one or more of the applicable best available control measures shall be used during active operations to minimize fugitive dust emissions from each fugitive dust source type.

Air-2. Low Emissions Tune-ups Schedule. A schedule of low emissions tune-ups shall be prepared for all equipment operating on site for more than 10 working days.

Air-3. Low-emission Equipment Utilization. Low-emission equipment/mobile construction equipment shall be used for project construction to the maximum extent practical, feasible, and available.

Air-4. Low-emission Mobile Vehicle Utilization during Construction. Low-emission or alternative-fueled mobile vehicles shall be used during project construction to the maximum extent practical, feasible, and available. In addition, carpooling of construction workers shall be encouraged.

Air-5. Low-emission Mobile Vehicle Utilization during Operation. Hybrid, low-emission (CA LEV II; PZEV, SULEV; or ULEV) or alternative-fueled mobile vehicles, such as electric or fuel cells, shall be used for the proposed project site to the maximum extent practical, feasible, and available. In addition, carpooling of operations and maintenance workers shall be encouraged.

With implementation of the above mitigation measures, project-related impacts on air quality will be less than significant.

Section 4.3
Biological Resources

4.3 BIOLOGICAL RESOURCES

Based on the information presented in the Initial Study for the Phase 7a project (**Appendix A**), LADWP determined that the project would not have significant impacts related to local policies or ordinances protecting biological resources. Impacts to approved local, regional or state habitat conservation plans were also found to be less than significant. Other potential impacts to biological resources from implementation of the proposed project are described below.

4.3.1 Regulatory Framework

Sensitive species are classified in a variety of ways, both formally (e.g. State or Federal Threatened and Endangered Species) and informally (e.g. CDFW "Species of Special Concern). Species may be formally listed and protected as Threatened or Endangered by either the CDFW or USFWS (Federal status abbreviations: FT, FE; State: ST, SE). The State also has State-Listed Rare (SR) species. A few species are listed as California Fully Protected (CFP). Numerous lists of species thought to be in jeopardy within the State have been compiled by other agencies and special interest groups, and while such lists generally are considered informal (in the sense that they are not created by, or linked to, any formal regulatory action), species included therein usually are given due consideration within CEQA documentation.

Additionally, the USFWS, CDFW, and other governmental agencies may recognize lists developed by special interest groups, if properly reviewed and published (i.e., Audubon Society "Blue List," for birds, with subunits for special concern (SC) and local concern (LC); California Native Plant Society (CNPS) "Rare and Endangered Plants of California;" Partners in Flight, bird Watch List (WL). All of these species as well as federal and state-listed species also are considered "CEQA species."

Terrestrial vegetation in California has been accorded sensitivity rankings within a synthesis (of the floristic association concepts of Sawyer and Keeler-Wolf (1995) and Sawyer, Keeler-Wolf and Evens (2009), combined with older community classification from Holland (1986) (CDFG, 2010).

Impacts to wetland and riparian habitat types may be regulated by Section 400 statutes of the Clean Water Act (CWA) and Section 1600 statutes of the California Fish and Game Code, as administered by the USACE and CDFW. Projects in such areas also may be subject to review by the California Regional Water Quality Control Board (Regional Board).

4.3.1.1 Federal Status

The Federal Endangered Species Act (FESA) defines an Endangered species (FE) as "any species which is in danger of extinction throughout all or a significant portion of its range . . . "

Threatened species (FT) are defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

Actions which have the potential to directly and adversely affect individuals or essential habitat of FT or FE species may be considered as "taking" that species, and are prohibited by provisions of the FESA, although plants do not receive the same level of protection as wildlife. For entirely private actions, permission to take a species or its habitat is governed by the FESA Section 10 (a)(1)(B), involving formal consultation with the USFWS and (usually) preparation of a Habitat Conservation Plan (HCP). Projects having any nexus with agencies, policies or funding sources of the Federal government may require formal consultation and mitigation under Section 7 of the FESA.

Where the USFWS has designated areas of Critical Habitat (CH) for a particular listed species, that habitat may be protected through the provisions of FESA Section 7. Section 3 of FESA defines critical habitat as specific areas within the geographic ranges of a species, at the time it is listed, on which are found those specific resources and features essential to the conservation of the species, and which may require special management considerations or protections.

The Migratory Bird Treaty Act (MBTA) of 1918 protects some level of protection to all native bird species from disturbance or harm. The MBTA prohibits actions such as pursuing, capturing, killing, attempting to pursue, capture or kill, or the possession of any part, nest, or egg of any migratory bird. In order for the MBTA to be invoked, violations under the act must be knowingly committed.

4.3.1.2 State Status

CDFW, through the California Endangered Species Act (CESA, Fish and Game Code Sections 2050-2068) defines its various categories of sensitive species as follows:

- **Endangered (SE):** A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
- **Threatened (ST)**: A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts.
- **Rare (SR):** A species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.
- **Candidate (SC)**: 1) A native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the California Fish and Game Commission has formally noticed as being under review by the CDFW for addition to either the list of endangered species or the list of threatened species (SCE, SCT), or 2) a species for which the commission has published a notice of proposed regulation to add the species to either list.

- **Species of Special Concern (SSC –** CSC): species of special concern status applies to animals not listed under the FESA or the CESA, but which nonetheless (1) are declining at a rate that could result in listing, or (2) historically occurred in low numbers and know threats to their persistence currently exist.

State Threatened or Endangered species may not be disturbed, relocated, harmed, or otherwise interfered with (as in disruption of movement corridors) (the functional definition of "taking" in CESA) except as negotiated through consultations and permitting from appropriate agencies. Actions that alter or destroy habitat for listed species may be considered a taking of that species. Senate Bill (SB) 879, amended Section 2081 and effective January 1, 1998, now allows incidental take if the taking is incidental to an otherwise lawful activity [also per Title 14 CCR, Sections 783.4(a) and (b)]. Impacts of the taking must be minimized and fully mitigated. Additionally, adequate funding must be provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures. No permit may be issued if there would be jeopardy to the continued existence of the species (SB 879, 1997).

4.3.2 LADWP Mitigation Obligations for Owens Lake

Since implementation of the OLDMP, several agreements and mitigation commitments have been made by LADWP for the protection and enhancement of biological resources on the lake bed. Construction and operation of the Phase 7a project will be conducted in a manner that is consistent with these existing agreements.

4.3.2.1 T30-1 Wetland Mitigation Area

A 43.5-acre wetland mitigation area has been established in T30-1 as mitigation for impacts from construction of Phase 5 of the OLDMP. No earthwork or irrigation system installation will occur in this portion of T30-1. The existing wetland mitigation area will not be disturbed under the Phase 7a project.

4.3.2.2 Snowy Plover

A breeding population of Snowy Plover occurs on Owens Dry Lake. Per the terms of previous mitigation measures, LADWP is required to maintain a baseline of at least 272 Snowy Plovers as determined during dedicated annual surveys (GBUAPCD, 2003) and a minimum of 523 acres of Shallow Flooding habitat for Snowy Plovers in consultation with CDFW (GBUAPCD, 2008a). This habitat is described as a mix of exposed sandy or gravelly substrate suitable for nesting in close proximity to standing water equal to or less than 12 inches in depth; the 523-acre area has been designated along the east side of the lake (east of T23 and T24). LADWP also maintains a minimum of 1,000 acres of shorebird and Snowy Plover habitat in T23 and 145 acres of habitat shallow flood suitable for shorebird foraging in T4-3. These designated habitat areas will not be disturbed as part of the Phase 7a project.

In conjunction with these requirements, LADWP implements an annual lake-wide survey for Snowy Plover. These annual surveys have shown an increase in the Snowy Plover population in response to the dust control project. In 2000 and 2001, the 2 years immediately prior to implementation of shallow flooding, lake-wide surveys estimated 112 and 167 Snowy Plovers respectively at Owens Lake (Ruhlen, Page, and Stenzel, 2006). Snowy Plovers responded rapidly to the increasing acreage of shallow flood habitat and the population has averaged 527 birds in the period 2002 to 2012.

4.3.2.3 Corvid Management Plan

In compliance with the mitigation measures adopted for the 2008 SIP EIR (GBUAPCD, 2008), LADWP implements a Corvid Management Plan in order to reduce potential direct and cumulative impacts to Snowy Plovers and other migratory shorebirds within the project area. The Common Raven is a known predator of the eggs and chicks of the Snowy Plover and other shorebirds. Management measures include refuse management and roosting/nesting prevention (on structures, utility lines, and fences). Implementation of the management actions will be expanded to include the Phase 7a project areas. The 2011 Owens Lake Biological Monitoring Report (LADWP, 2011b) summarized corvid management results:

- The population size of Common Ravens in the area of Owens Lake has not increased due to lack of any increase in nesting habitat in the project area. Additionally, corvid nesting habitat close to the project area was removed in the Owens River Delta with the removal of large tamarisk trees in 2010.
- Common Ravens that forage in the project area, often utilize areas with vegetation, typically away from Snowy Plover and other shorebird nesting areas.
- Snowy Plover counts have significantly increased since dust control project implementation, indicating project benefits to Snowy Plovers and no impact from corvids.

4.3.3 Environmental Setting

Prior to implementation of the Dust Control Project in 2000, Owens Dry Lake consisted of a large expanse of barren playa, a remnant hypersaline brine pool, and scattered springs and seeps along its shoreline. Sparse vegetation, including saltgrass and occasional shrubs, occurred on the playa within isolated spring mounds. Previous surveys did not identify any listed or locally important plant species for areas that are now part of the dust control project (GBUAPCD, 1997a; CH2M Hill, 2000; Sapphos, 2003; Sapphos, 2008).

Surveys conducted prior to implementation of dust control identified approximately 81 species of invertebrates from aquatic habitats adjacent to and on the playa, including several species of shore and brine fly supported by spring flow (GBUAPCD, 1997a). Lizards and snakes could be found on the playa adjacent to shrub communities. Bird use of the playa prior to the implementation of dust control was associated with seeps and springs that support invertebrate populations. Pre-dust control mammal use was generally limited to the edge of the playa adjacent to vegetation as a travel corridor for larger mammals. Two bat species were detected prior to the dust control, Spotted Bat (*Euderma maculatum*) and Yuma Myotis (*Myotis yumanensis*).

4.3.3.1 Literature Review

LADWP Watershed Resources staff reviewed previous biological resources surveys conducted for the Phase 7a project areas (GPUAPCD, 2008b and LADWP, 2009) and consulted the California Natural Diversity Database (CNDDB) (CDFG, 2011 and 2012) for information on potentially occurring sensitive species in the project areas. Note that the Phase new 7a DCA are the same areas previously proposed for Moat & Row DCM (GPUAPCD, 2008b and LADWP, 2009). The CNDDB was queried for the Bartlett, Dolomite, Keeler, Lone Pine, Olancha, Owens Lake, Vermillion Canyon 7.5 minute US Geological Survey Quadrangles (USGS quads) that encompass the project area. Additionally, 10 of the surrounding USGS quads were reviewed and considered as in the 2008 SIP/EIR (GBUAPCD) for the Phase 7 project (Centennial Canyon, Cerro Gordo Peak, Cirque Peak, Haiwee Pass, Haiwee Reservoirs, Mt. Langley, New York Butte, Templeton Mountain, Union Wash, and Upper Centennial Flat). Satellite imagery and the results of LADWP habitat mapping (2010) on the lake were also reviewed.

4.3.3.2 Field Survey

Field surveys were then conducted to verify current conditions and to describe existing biological resources on areas not previously surveyed. New survey areas included 50-foot buffer zones around DCAs and the alignments for the water supply pipeline for T37-2. Field surveys were conducted in April and May 2011 following spring green-up. Results are presented in the Owens Lake Dust Control Project, Phase 7a Biological Resources Survey Summary (LADWP, 2011) and are summarized below. Wetland delineations (per the methods in USACE, 1987 and 2008) were also conducted where hydrophytic vegetation occurred at greater than 5 percent cover in areas that could be impacted by the Phase 7a project. Based on the slow growth rate of vegetation on Owens Lake, it is not anticipated that there have been substantial changes in existing vegetation conditions since spring 2011. Survey of the access roadway was conducted in October 2012; results were included in the Biological Resources Survey Summary.

4.3.3.3 Existing Biological Resources Setting

Based on literature review and 2011 field surveys, existing conditions on the Phase 7a project areas are summarized in **Table 4.3-1**. The vast majority of the acreage of the new DCAs (T37-1, 37-2, T1A-3, T1A-4, T12-1, and T32-1) is barren alkali playa, areas of Owens Lake bed that were exposed as the lake dried. Smaller areas of saltbush scrub are present, consisting of low intricately branched, often spiny shrubs that are usually well-spaced with bare ground between. The dominant shrub species are shadscale (*Atriplex confertifolia*) and budsage (*Picrothamnus desertorum*). Other species that may be present within saltbush scrub include: *Atriplex parryi* (Parry's saltbush), *Distichlis spicata* (saltgrass), *Nitrophila occidentalis* (boraxweed), *Eriogonum inflatum* (buckwheat), *Atriplex phylostegia* (leafcover saltweed), *Sueada moquinii* (Mojave seablite), *Lepidium fremontii* (desert pepperweed), *Sarcobatus vermiculatus* (greasewood) and *Machaeranthera carnosa* (shrubby alkaliaster)). Areas of Transmontane Alkali Meadow (TAM) are also present. Dry alkali meadow species include: saltgrass, greasewood, Parry's saltbush, *Scirpus americanus* (American bulrush), and *Anemopsis californica* (yerba mansa)). No wetlands are present in the new DCAs or their buffer areas.

Land cover in the Transition Areas is predominantly open water, barren alkali playa, and saturated soil with algae. Smaller areas of desert saltbush scrub (including: greasewood, Parry's saltbush, Mojave seablite and occasionally a sparse understory of saltgrass), dry alkali meadow and wet alkali meadow (including: saltgrass, *Schoenoplectus maritimus* (alkali bulrush), *Typha domingensis* (southern cattail), *Schoenoplectus americanus* (chairmaker's bulrush), *Mimulus gutatus* (seep monkeyflower), *Juncus balticus* (Baltic rush), *Juncus torreyi* (Torrey's rush), *Salix exigua* (narrowleaf willow), *Poa secunda* (Sandberg bluegrass), *Polypogon monspeliensis* (annual rabbitsfoot grass), *Salix laevigata* (red willow), *Tamarix ramosissima* (saltcedar), boraxweed, *Scirpus nevadensis* (Nevada bulrush), *Populus fremontii* (Fremont cottonwood), *Salix gooddingii* (Gooddings willow), yerba mansa, *Cordylanthus maritimus* (salt marsh bird's beak), *Berula erecta* (cutleaf waterparsnip) and *Hordeum jubatum* (foxtail barley)) are present. A total of approximately 483 acres of created wetlands are present in the Transition Areas (as of Spring 2011).

Species present on the access roadway (October 2011) are: *Atriplex canescens* (four wing saltbush), shadscale saltbush, *Atriplex polycarpa* (allscale saltbush), saltgrass, *Ephedra nevadensis* (Nevada jointfir), *Ericameria nauseosa* (rubber rabbitbrush), buckwheat, shrubby alkaliaster, boraxweed, *Salsola tragus* (prickly Russian thistle), Mojave seablite and saltcedar.

With implementation of the dust control since 2000, vegetation conditions and wildlife use of Owens Lake have changed substantially. Implementation of DCMs has resulted in an increase in the use of Owens Lake (over pre-2000) conditions by many wildlife species as water and vegetation resources are now present on much of the former barren playa. Implementation of DCMs has attracted large numbers of birds, primarily gulls, avocets, sandpipers and plovers (LADWP, 2010b). Since the start of the dust control program, Shallow Flooding DCAs have supported invertebrates including midges (Family Chironomidea), water boatman (Family Corixida), water scavenger beetles (Family Hydrophilidae), and backswimmers (Family Notonectidae). Brine flies are the most abundant aquatic invertebrate in the Shallow Flooding areas. Brine shrimp (*Artemia* sp.) have also been observed in some DCAs with ponded water (LADWP, 2010). These species provide forage for various migratory shorebirds and waterfowl that inhabit the shallow flood areas. Snowy Plover, American Avocet, and Black-necked Stilt are known to nest successfully in existing shallow flooding areas. Fish are not present in the Shallow Flooding ponds. Lizards have been observed on roads, in alkali meadow areas, and adjacent to scrub habitat. Due to the lack of cover and food resources, small mammal use of the open playa is limited, although deer mice (*Peromyscus maniculatus*) have been observed within some shallow flood cells. Pocket gopher, Owens Valley Vole, deer mice and other small mammals are more abundant and expected in areas of dry alkali meadow. Larger mammals (coyote, kit fox, and bobcat) may hunt in alkali meadow and upland scrub areas (LADWP, 2010). A detailed description of wildlife use in the dust control areas on Owens Lake is included in the Owens Lake Habitat Management Plan (LADWP, 2010b).

Wildlife use of the Phase 7a areas observed during the field surveys is noted in **Table 4.3-1**. An overall summary of existing vegetation types in the Phase 7a areas is provided in **Table 4.3-2**. Vegetation mapping for Phase 7a project areas (new DCAs, Transition Areas, T37-2 water supply pipeline) is provided in **Appendix E**.

Sensitive Species. Based on the CNDDB listings for the Bartlett, Dolomite, Keeler, Lone Pine, Olancha, Owens Lake, and Vermillion Canyon 7.5 minute US Geological Survey Quadrangles (USGS quads) that encompass the project area (CDFG, 2011a, 2011b, 2012a, and 2012b), and LADWP knowledge of the areas, sensitive plant and animal species with the potential to occur on or near the project sites are summarized in Tables 4.3-3 (Listed Species), 4.3-4 (Sensitive Species) and 4.3-5 (Locally Important Species). Occurrence information from 2008 is also provided for additional reference. Species not included due to change in regulatory status are: American Peregrine Falcon (*Falco peregrinus anatum*), Double-crested Cormorant (*Phalacrocorax auritus*), White-faced Ibis (*Plegadis chihi*), Osprey (*Pandion haliaetus*), Sharp-shinned Hawk (*Accipiter striatus*) Cooper's Hawk (*Accipiter cooperi*) Ferruginous Hawk (*Buteo regalis*), Merlin (*Falco columbarius*), Prairie Falcon (*Falco mexicanus*) Long-billed Curlew (*Numenius americanus*), California Gull (*Larus californicus*), Le Conte's Thrasher (*Toxostoma lecontei*), and Virginia's Warbler (*Oreothlypis luciae*). Additionally, the project area is outside the breeding range for the sensitive subspecies of California Horned Lark (*Eremophila alpestris actia*), Vaux's Swift (*Chaetura vauxi*) and Tricolored Blackbird *(Agelaius tricolor)*. Southern grasshopper mouse (*Onychomys torridus ramona*) and Sage Sparrow (*Artemisiospiza belli belli*) are not present in the project area.

Table 4.3-1
Summary of Existing Biological Resources Conditions – Phase 7a Project Areas

Cell/Buffer		Existing Vegetation Conditions
New DCAs under Phase 7a	**T37-1**	131 acres barren alkali playa, 6.4 acres saltbush scrub. Wetland delineation conducted where hydrophytic vegetation occurred. No wetlands were found within the project site.
	T37-1 Buffer	6.2 acres barren alkali playa, 2.1 acres saltbush scrub. Wetland delineation conducted where hydrophytic vegetation occurred. No wetlands were found within the project site.
	T37-2	371.5 acres barren alkali playa, 0.2 acres saltbush scrub, and 5.7 acres alkali meadow. Wetland delineation conducted where hydrophytic vegetation occurred. No wetlands were found within the project site.
	T37-2 Buffer	25 acres barren alkali playa, 0.2 acres saltbush scrub, 1.5 acres alkali meadow. Wetland delineation conducted where hydrophytic vegetation occurred. No wetlands were found within the project site.
	T1A-3	489.1 acres barren alkali playa and 13.2 acres saltbush scrub. No wetlands occur within the project site.
	T1A-3 Buffer	14.9 acres barren alkali playa.
	T1A-4	615.5 acres barren alkali playa.
	T1A-4 Buffer	13.3 acres barren alkali playa.
	T12-1	211.9 acres barren alkali playa. Moat and row test area removed in 2010. Previously completely disturbed (2007/2008). Tillage on-going as of 2012.
	T32-1	108.1 acres barren alkali playa; 6.6 acres saltbush scrub. Moat and row test area removed in 2010. Wetland delineation conducted where hydrophytic vegetation

Cell/Buffer		Existing Vegetation Conditions
		occurred. No wetlands were found within the project site.
Phase 7a Transition Areas	T1A-2_a	Shallow Flooding DCM was implemented in 2010 east of Mainline Road. The cell is inundated with no vegetation present. No DCM was implemented in the small portion of T1A-2_a (west of Mainline). Current conditions in this cell are identified as 218.2 acres barren alkali playa, 11 acres open water, 27.3 acres algae-dominated saturated soil, and 1.3 acres of dry alkali meadow. A wetland delineation was conducted in the alkali meadow portion where hydrophytic vegetation occurred, but no wetlands were identified within the project site.
	T28N	Shallow Flooding DCM was implemented in 2002. Current conditions are marked by 60.9 acres alkali meadow, 160.8 acres barren alkali playa, 52.8 acres open water, and 172.3 acres algae-dominated saturated soil. Wetland delineations were performed where hydrophytic vegetation occurred at greater than 5% cover. 56.7 acres of created wetlands are present in this cell.
	T28S	Shallow Flooding DCM was implemented in 2002. This cell currently has 33.4 acres wet alkali meadow, 0.1 acres dry alkali meadow associated with spring mounds, 104.1 acres barren alkali playa, 45.9 acres open water, and 111.5 acres algae-dominated saturated soil. LADWP's 2011 survey confirmed the 33.4 acres of wet alkali meadow to be jurisdictional wetlands that are a result of LADWP's dust control operations.
	T30-1_a	Shallow Flooding DCM was implemented in 2002 and improved in 2005. This cell currently has 5.9 acres wet alkali meadow, 0.2 alkali meadow, 6.6 acres barren alkali playa, 146.7 acres open water, and 9.2 acres algae-dominated saturated soil present within this cell. The 5.9 acres of wet alkali meadow qualify as created wetlands and are an extension of the created T30-1_b wetlands.
	T30-1_b	Shallow Flooding DCM was implemented in 2002 and improved in 2005. This cell currently has 350.8 acres wet alkali meadow, 123.7 acres barren alkali playa, 0.9 acres open water, and 47.8 acres algae-dominated saturated soil present within this cell. LADWP's 2011 survey confirmed 350.8 acres of man-induced jurisdictional wetlands within this cell.
	T26, T28 N and S, T30-1_b Buffer	This buffer is characterized as 1.2 acres wet alkali meadow, 1.7 acres alkali meadow, 13 acres barren alkali playa, and 1.5 acres algae-dominated saturated soil. The 1.2 acres of wet alkali meadow is a continuation of these communities in the adjacent shallow flood cells, and are characterized as wetlands.
	T36-1_b	Shallow Flooding DCM was implemented in 2002 and improved in 2005. Current conditions within this cell are identified as 36.6 acres alkali meadow, 226.5 acres barren alkali playa, 7.5 acres open water, and 30.7 acres algae-dominated saturated soil. Wetland delineations were performed in areas where hydrophytic vegetation occurred at greater than 5% cover. 36.6 acres of created wetlands were confirmed in this cell as a result of LADWP's dust control operations.

Cell/Buffer		Existing Vegetation Conditions
	T35-1	Shallow Flooding DCM was implemented in 2002. Current conditions are 69 acres of saturated soils and open water.
	T35-2	Shallow Flooding DCM was implemented in 2002. Current conditions are 95 acres of saturated soils and open water.
Pipelines Corridors	**Pipeline Option A (with buffer)**	Current conditions along this alignment are 0.1 acre saltbush scrub, 54.2 acres barren alkali playa, and 1.1 acres saturated playa. No wetland delineations were conducted along this alignment, as the only vegetated area had an average cover of 1%.
	Pipeline Option B (with buffer)	This area currently has 0.3 acres saltbush scrub and 44.1 acres barren alkali playa. No wetlands occur along this alignment or associated buffer.
	Pipeline Option C (with buffer)	This area currently has 40 acres barren alkali playa. No wetlands occur along this alignment or associated buffer.

Table 4.3-2
Summary of Existing Landcover Types in the Phase 7a DCAs (acres)

DCA		Current Acres per 2011 Biological Resources Surveys					
		Barren Playa[1]	Desert Saltbush Scrub	Alkali Meadow	Saturated Soil[2]	Open Water[2]	Total[3]
Transition Areas							
	T1A-2_a	62.1	0.0	1.3	185.4	11.2	260.0
	T28N	160.7	0.0	62.1	176.7	53.0	452.5
	T28S	102.8	0.0	34.4	116.2	46.4	299.9
	T30-1	129.8	0.0	357.0	57.4	147.5	691.7
	T36-1_b	48.5	0.0	38.0	214.1	8.2	308.7
	T35-1	5.0	0.0	0.0	3.2	59.2	67.4
	T35-2	8.6	0.0	0.0	8.3	74.2	91.1
Primary 7a DCAs	T1A-3	489.2	13.2	0.0	0.0	0.0	502.4
	T1A-4	615.5	0.0	0.0	1.5	0.0	617.0
	T12-1	211.9	0.0	0.0	0.0	0.0	211.9
	T32-1	95.6	5.9	0.0	0.0	0.0	101.5
	T37-1	131.0	6.4	0.0	0.0	0.0	137.3
	T37-2	371.5	0.2	5.7	0.0	0.0	377.4

Source: LADWP, 2011
[1] Includes roads and other disturbed areas.
[2] Existing open water and saturated soil as of May 5, 2010. Landcover varies seasonally.
[3] Variations in acreage totals (design drawings compared to survey areas) are related to berms, roads, and other existing infrastructure features.

Table 4.3-3
Summary of Listed Species with the Potential to Occur in the Region of the Phase 7a Project Areas

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Plants				
Owens Valley checkerbloom (*Sidalcea covillei)*	SE	Associated with alkaline meadows in Owens Valley at elevation range of 1,075-1,425 meters.	Surveyed for in 1995-1996, 1999-2001, and 2003 Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake 2004; determined absent as a result of presence/absence surveys of supplemental DCM sites in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Focused survey conducted at Willow Dip in response to informal report – species not observed. Based on survey results, species not anticipated to be present in Phase 7a project areas.
Fish and Wildlife				
Owens tui chub (*Gila bicolor snyderi*)	FE, SE	Endemic to the Owens River basin in a variety of habitats needing clear, clean water and aquatic vegetation.	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; historic distribution includes Owens Basin habitats from the headwaters of the Owens River in Long Valley to the terminal reach of Owens Lake; known occurrences in the local area include Cabin Bar Ranch south of Olancha.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found within the project site.
Owens pupfish (*Cyprinodon radiosus)*	FE, SE	Typical habitat for the Owens pupfish is shallow (two inches to three feet), still to slow moving warm waters with good water quality, sparse cattails and bulrush, and a sand-silt detritus bottom	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; historic occurred from Fish Slough south to Lone Pine but were never recorded as far south as Owens Lake	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Occupied habitat not found within the project site.
Desert tortoise (*Gopherus agassizii)*	FT, ST	Requires friable soils for burrow construction in open desert scrub, desert wash, and Joshua tree woodland	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; potential burrows found; known south of Owens Valley; an adult was observed in July 1995 to the east of Owens Lake.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Suitable habitat not present in the Phase 7a project areas.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Bald Eagle (*Haliaeetus leucocephalus)*	SE	Scarce migrants may occur at sites in the desert where suitable avian prey is concentrated, such as waterbird populations on flooded areas of Owens Lake	Surveyed for in 1996 and spring 2003 at Dust Control Project sites, but not found. This species has not been recorded on any lakewide survey at Owens Lake or in the Owens Lake delta	There are no records of this species in Phase 7a project area. Suitable habitat not present in the six new Phase 7a DCAs; transient foraging in the Phase 7a Transition Areas possible.
Swainson's Hawk (*Buteo swainsoni)*	ST	The Swainson's Hawk needs trees or large shrubs to nest in, and nearby grassland or agricultural areas in which to forage.; migrants may occur throughout the desert	Breeding pairs have been found near Olancha. Not found during 2002-2003 surveys within the proposed project area; found during directed surveys along the Owens River in 1996 approximately less than 1 mile from the proposed project.	There are no records of this species in Phase 7a project area. No suitable nesting habitat present in Phase 7a area;. transient use in the new DCAs and Phase 7a Transition Areas possible.
Least Bell's Vireo (*Vireo bellii pusillus)*	FE, SE	The Least Bell's Vireo is a riparian obligate breeding species that occurs in cottonwood-willow woodlands, oak woodlands, and mule fat scrub	Surveyed for in 1995-1996 and spring 2003 at Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; habitat assessment performed in 2002-2003 and no suitable vireo habitat found within the proposed project area;	No suitable habitat present within project area; no records of this species in the Phase 7a project area
Big horn sheep (*Ovis canadensis sierrae*)	FE, SE	Optimal bighorn sheep habitat is visually open and contains steep, generally rocky slopes.	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Suitable habitat not present in the Phase 7a project areas.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Mohave ground squirrel (*Spermophilus mohavensis)*	ST	Prefers sandy gravelly soils in open desert scrub, alkali scrub, and Joshua tree woodland	Surveyed for in 1995-1996 at Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; habitat assessment in 2003 determined no suitable habitat present within the proposed project area; record from south of Owens Lake along State Highway 395 near Olancha.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Suitable habitat not present in the Phase 7a project areas.

[1] Source: GBUAPCD, 2008b (Table 4.4.3-1 of the Biological Resources Technical Report)

Notes:
FE = Listed as endangered under the federal ESA
FC = Listed as candidate under the federal ESA
FT = Listed as threatened under the federal ESA
PE = Proposed to be listed as endangered under the federal ESA
PT = Proposed to be listed as threatened under the federal ESA
SE = Listed as endangered by the State of California
SR = Listed as rare by the State of California
ST = Listed as threatened under the State of California

Table 4.3-4
Summary of Sensitive Species with the Potential to Occur In the Region of the Phase 7a Project Areas

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Fish and Wildlife				
Owens speckled dace *(Rhinichthys osculus ssp.)*	CSC	The speckled dace is a habitat generalist that occupies a variety of habitats including small to medium sized streams, thermal springs, headwater streams, small creeks, and large rivers	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; currently found in systems isolated from introduced predatory game species such as canals and small creeks of northern Owens Valley, and in Fish Slough. A population occurs on private property in nearby Little Lake.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found within the project site.
Owens sucker *(Catostomus umeiventris)*	CSC	Freshwater streams and seeps, including the Owens River Delta and creeks within the Owens Valley	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; 1989 surveys found species in northern Owens Valley habitats occupied by brown trout.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found within the project site.
Sierra Nevada yellow-legged frog (*Rana sierrae*)	CSC	Ponds, meadow and pools of high elevation mountain habitats in the central and southern Sierra Nevada.	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found within the project site.
Inyo Mountains slender salamander (*Batrachoseps campi*)	CSC	Uncommon species known only from several canyons of the west and east slopes of the Inyo Mountains east of Lone Pine in Inyo County. Appears to exist only in moist microhabitats surrounded by desert.	Not Referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found within the project site.
Northern sagebrush lizard (*Sceloporus graciosus graciosus)*	BLM	Occurs in mainly sagebrush or other shrub habitat, chiefly at higher elevations where it prefers open ground with scattered low bushes	Not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; unlikely but may possibly occur in vicinity of Owens Lake.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found within the project site.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Western Least Bittern *(Ixobrychus exilis hesperis)*	CSC	Nests among fresh and brackish marshes with dense and tall aquatic and semiaquatic vegetation	Not found during 1995-1996 and 2002-2003 surveys within the Dust Control Project sites; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; suitable habitat was absent in 2003 within the proposed project area; found at Cottonwood Marsh in 1995 and Cottonwood Springs in 1996 and in the Owens River Delta in 2005 and 2009.	There are no records of this species in Phase 7a project area. There is no suitable habitat present within the project area;
Northern Harrier (*Circus cyaneus)* (Nesting)	CSC	Nests in riparian and marshland habitats and forages over open grasslands, marshes, and wetland areas	Has been observed nesting in the Owens River Delta, Keeler Ponds, and Swedes Pasture; Has been the most abundant raptor in terms of detections at Owens Lake. Most frequently seen over areas supporting wetland vegetation.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. However, northern harriers were documented during the 2011 Owens Lake Audubon Big Day Bird Count at T-29-2 and Cartago Springs areas.
Golden Eagle (*Aquila chrysaetos)* (Nesting and wintering)	FPS	Nests on steep cliff faces or atop tall species of trees with snags	Found foraging in Owens River delta in 1995-1996; found frequently foraging along margins of Owens Lake; not found during spring 2003 surveys within the proposed project area; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; observed flying over proposed project site in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Suitable nesting and wintering habitat not present in the Phase 7a project areas.
Snowy Plover (*Charadrius nivosus)*	CSC	Prefers sandy beaches, salt pond levees and shores of large alkali lakes	Observed nesting on playa during May 1989, 1993, 1996, and during 2001-2006 surveys; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; observed during directed snowy plover surveys in 2007.	A Snowy Plover nest was found on the access road between T28N and S during 2011 surveys for Phase 7a. No others were observed during Phase 7a surveys, but snowy plover commonly use Owens Lake DCAs for nesting and foraging. Please refer to Appendix E for more information on current plover activity on Owens Lake.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Mountain Plover *(Charadrius montanus)*	PT, CSC	Agricultural fields and meadow areas	Four observed at meadow at Keeler Ponds (Horse Pasture) in 1995, 0.5 mile north of project site; otherwise surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites and was not found.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Possible fall migrant; potentially suitable wintering habitat in the Transition Areas.
Burrowing Owl (*Athene cunicularia)* (Burrow sites)	CSC	Nests and resides in desert scrub and agricultural habitats	Found during autumn 1995 surveys west of Point Bartlett; found along Cottonwood Creek during 2002 surveys; not found during spring 2003 surveys within the proposed project area; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004. The Great Basin Unified Air Pollution Control District has documented use of pipes for burrows within Dust Control Project Areas. Habitat not found in proposed project site.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. However, Burrowing Owls were observed during the 2011 Audubon Big Day Count at North Cottonwood. Potentially suitable nesting habitat in the Phase 7a project areas.
Loggerhead Shrike *(Lanius ludovicianus)* (Nesting)	CSC	Nests and resides in desert scrub and savannah woodland habitats	Found at Keeler Ponds and Cottonwood Creek during 1995-1996 and 2002 surveys and found along the Owens River delta during 2002-2003 surveys; not found during spring 2003 surveys within the proposed project area; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; found during April 2006 surveys when it was common at Managed Vegetation areas within the proposed project site; observed adjacent to supplemental DCMs in 2007; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Potentially suitable nesting habitat adjacent to, but not on, the Phase 7a project areas.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Yellow Warbler (*Setophaga petechia brewsteri)* (Nesting)	CSC	Nests in willow riparian habitats	Not found during spring 2003 surveys within proposed project area; suitable habitat does not exist within the proposed project area (regardless, listed as potentially present); found along Owens River delta in 1995-1996 and 2002 as migrants. Habitat not found in proposed project site.	There are no records of this species in Phase 7a project area. There is no suitable habitat present within the project area;
Yellow-breasted Chat *(Icteria virens)* (Nesting)	CSC	Resides in low, dense riparian habitat consisting of willow, blackberry, wild grape	Surveyed for in 1995-1996 and 2002-2003 at Dust Control Project sites, but not found; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; suitable habitat does not exist within the proposed project area (regardless, listed as potentially present); found south of Cabin Bar Ranch in July 1995, but not found during 1996. Habitat not found in proposed project site.	There are no records of this species in Phase 7a project area. There is no suitable habitat present within the project area;
Pallid bat *(Antrozous pallidus)*	CSC, BLM	Roosts in natural cavities; Inhabits deserts, grasslands, shrublands; most common in open, dry habitats with rock areas	Not found during 1995-1996 at Dust Control Project sites; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; found foraging over meadows at Owens River delta, Keeler Ponds, and Dirty Socks in 1995-1996; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.
Townsend's big-eared bat *(Corynorhinus townsendii)*	CSC, BLM	Generally roosts in caves and mines in a variety of habitats throughout the desert regions of California; forages over mesic and riparian corridors	Surveyed for in 1995-1996 at Dust Control Project sites, but not found; found east of State Highway 136 outside of project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Spotted bat *(Euderma maculatum)*	CSC, BLM	Roosts in large, steep rock formations; forages over varied habitats	Found foraging over Owens Lake during 1995-1996 and 2003 surveys; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.
Western small-footed myotis *(Myotis ciliolabrum)*	BLM	Found throughout the desert; solitary species	Found foraging over aquatic habitats in 1995-1996 at Dust Control Project Site; found foraging over Owens Lake in 2003; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.
Long-eared myotis *(Myotis evotis)*	BLM	Found in coniferous forests; migrates through riparian habitat in Owens River Valley	Found in 1996 at cattle tank north of North Seep and west of Keeler; found in autumn 1995 and spring 1996 in Owens Lake area.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.
Long-legged myotis *(Myotis volans)*	BLM	Found in the desert up to 2,500 meters in forested regions and brushy areas; roosts in buildings, trees, and crevices	Found foraging over aquatic habitats in 1995-1996 at Dust Control Project Site; possibly detected by acoustic signature in 2003 at Owens Lake.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.
Yuma myotis (*Myotis yumanensis)*	BLM	Found in the desert, especially along wooded canyon bottoms; common in southeastern California; colonial species, roosting in caves and old buildings	Found foraging over aquatic habitats in 1995-1996 at Dust Control Project Site; found foraging over Owens Lake in 2003.	Potential foraging habitat present in Phase 7a project area; suitable roosting habitat not present in project area.

Species	Status	Habitat	Occurrence in Owens Lake Area[1]	Occurrence in Phase 7a Project Area
Owens Valley vole *(Microtus californicus vallicola)*	CSC	Found in friable soils of wetlands and lush grassy ground in the Owens Valley	Surveyed for during May 1990 survey in support of Lake Minerals project; several found during 1996 surveys at the north flood irrigation plot site; found during focused surveys in Swedes Pasture and Dirty Socks Spring; sign found at Sulfur Springs and Sulfur Springs Road in 2003; not found at two air quality monitoring sites during surveys on west side of Owens Lake on August 4, 2004; determined absent as a result of small mammal trapping for supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Suitable habitat not present in the six new Phase 7a DCAs; species has not been observed in the Transition Areas.
American badger (*Taxidea taxus*)	CSC	Most numerous in California in the Great Basin region, fluctuating with populations of squirrels and pocket gophers, in open areas including deserts	During surveys for predatory mammals conducted in the fall of 1995 a badger dig was observed in the shadscale scrub west of the Owens River riparian area.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Suitable habitat not present in the Phase 7a project areas.

[1] Source: GBUAPCD, 2008b (Table 4.4.3-2 of the Biological Resources Technical Report)

Notes:

CSC = California Species of Special Concern

BLM = BLM Sensitive Species

FPS = Federally Protected Species

Table 4.3-5
Summary of Locally Important Species with the Potential to Occur in the Region of the Phase 7a Project Areas

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2011 Occurrence in Phase 7a Project Area
Plants				
Sanicle cymopterus *(Cymopterus ripleyi* var. *saniculoides)*	CNPS 1B	Typically associated with Joshua tree woodland, Mojavean desert scrub of Inyo County at elevation range of 1,000-1,675 meters	Observed among scrub habitat near Dirty Socks well, Owens Lake basin; surveyed for in 1995-1996, 1999-2001, and 2003-2004 at Dust Control Project sites and proposed project area, but not found.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Parish's popcorn-flower (*Plagiobothrys parishii)*	CNPS 1B	Great Basin scrub	Found north of Cartago, Inyo County; flowering period is May-June (and uncommonly in November).	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Reported from Willow Dip and Ash Creek spring (outside of the project area). Species absent from the Phase 7a project areas.
Darwin rock cress (*Arabis pulchra* var. *munciensis)*	CNPS 2	Found on limestone among Chenopod scrub, Mohavean desert scrub in Inyo County at elevation range of 1,100-2,075 meters	Not found during 1995-1996, 1999-2001, and 2003 surveys at Dust Control Project sites or within the proposed project area.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Naked milk-vetch *(Astragalus serenoi* var. *shockleyi)*	CNPS 2	Found on course granitic alluvium among Chenopod scrub, Great Basin scrub at elevation range of 1,500-2,250 meters	Not found during 1995-1996 and 1999-2001 surveys at Dust Control Project sites; not found during 2003 focused surveys within the proposed project area.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Horn's milk-vetch (*Astragalus hornii*)	CNPS 1B	Found on lake margins, meadows and seeps, playas	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Not anticipated to be present in the project area.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2011 Occurrence in Phase 7a Project Area
Inyo phacelia *(Phacelia inyoensis)*	CNPS 1B	Found in alkaline meadows and seeps of Inyo County at elevation range of 900-3,200 meters	Surveyed for in 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Species absent from the Phase 7a project areas.
Creamy blazing star *(Mentzelia tridentata)*	CNPS 1B	Found in Mojavean desert scrub at elevation range of 700-1,160 meters; flowering period is March-May	Habitat not found in proposed project site.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Booth's evening primrose *(Camissonia boothii ssp. boothii)*	CNPS 2	Typically associated with Joshua tree woodland and pinyon and juniper woodland; observed among stabilized dunes at Owens Lake basin at elevation range of 900-2,400 meters; blooms April to September	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum)*	CNPS 2	Associated with desert dunes. Great Basin scrub of Inyo County at elevation range of 700-1,625 meters; blooms April to May	Surveyed for in 1999 and 2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area. Habitat not found in proposed project site.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Narrow-leaved cottonwood *(Populus angustifolia)*	CNPS 2	Found along creeks and rivers in riparian forest of Inyo County at elevation range of 500-2,125 meters; flowering period is March-April	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003 focused surveys within the proposed project area.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project site.
Nevada oryctes *(Oryctes nevadensis)*	CNPS 2	Found in dry, sandy soil in washes and open scrub habitat in the Owens Valley at elevation range of 1,100-2,550 meters	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Species absent from the Phase 7a project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2011 Occurrence in Phase 7a Project Area
Inyo County star-tulip *(Calochortus excavatus)*	CNPS 1B	Found among alkaline meadows in shadscale scrub at elevation range of 1,150-2,000 meters	Surveyed for in 1995-1996, 1999, 2000, and 2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project areas.
Alkali cord grass (*Spartina gracilis)*	CNPS 4	Found in alkali meadows and seeps of Inyo County; observed at Owens Lake basin at elevation range of 1,000-2,100 meters; blooms June to August	Surveyed for in 1995-1996 and 1999-2001 at Dust Control Project sites, but not found; not found during 2003-2004 focused surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Species absent from the Phase 7a project areas.
Father Crowley's lupine (*Lupinus dedeckerae*)	CNPS 1B, CR	Found in decomposed granitic substrate in Great Basin scrub, Riparian forest, Riparian scrub, Upper montane coniferous forest	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project areas.
DeDecker's clover *(Trifolium macilentum var. dedeckerae)*	CNPS 1B	Found in granitic, rocky substrate in Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project areas.
Bald daisy (*Erigeron calvus*)	CNPS 1B	Found in Great Basin scrub.	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project areas.
July gold *(Dedeckera eurekensis)*	CNPS 1B, CR	Found in limestone outcrops, 3500 to 7000 ft elevation	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Habitat not found in proposed project areas.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2011 Occurrence in Phase 7a Project Area
Wildlife				
Moth *(Tescalsia guilianata)*	Locally rare	Dune and alkali meadow habitats	Found at Olancha Dunes and Southwest Seeps during 1995-1996 surveys; not found during 2003 surveys within the proposed project area; suitable habitat was found in dunes and sand hummocks during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Monarch butterfly (*Danaus plexippus)*	Locally rare	Riparian and woodland habitats; found near Olancha in autumn 1995	Found in Owens River delta during 1995-1996 surveys; adults, milkweed, or larval host plants during the 2003 surveys were not found; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Alkali skipper *(Pseudocopae-odes eunus)*	Locally rare	Dune and alkali meadow habitats	Observed at Dirty Socks during 1995-1996 surveys; not found during 2003 surveys within the proposed project area; suitable habitat was found in saltgrass dominated transmontane alkaline meadow during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Owens valley tiger beetle (*Cicindela tranquebarica inyo)*	Locally rare	Dune and alkali meadow habitats	Found at Olancha Pond, Dirty Socks, and Swedes Pasture during 1995-1996 surveys; found in saltgrass dominated transmontane alkaline meadow during 2003 surveys within the proposed project area; observed within the Channel Area as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2011 Occurrence in Phase 7a Project Area
Alkali flats tiger beetle *(Cicindela willistoni pseudosenilis)*	Locally rare	Dune and alkali meadow habitats	Found at Dirty Socks, southwest seep, and northwest of Dirty Socks during 1995-1996 surveys; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Slender-girdled tiger beetle *(Cicindla tenuicincta)*	Locally rare	Dune and alkali meadow habitats	Observed at southwest seep, and northeast of Dirty Socks during 1995-1996 surveys; not found during 2003 surveys within the proposed project area; suitable habitat was found in saltgrass dominated transmontane alkaline meadow during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Owens dune weevil (*Trigonoscuta owensii)*	Locally rare	Dune and alkali meadow habitats	Found at Olancha Dunes and dunes northeast of Keeler during 1995-1996 surveys; found during 2003 surveys within the proposed project area; suitable habitat was found in dunes and sand hummocks during 2003 surveys within the proposed project area; determined absent as a result of presence/absence surveys in supplemental DCMs in 2007.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Wong's springsnail (*Pyrgulopsis wongi*)	OBWS	Typically inhabit only springs and short sections of spring brooks with good water quality	Not referenced.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project. Known from some west side springs on Owens Lake. Suitable habitat not present in the Phase 7a project areas.
Willet (*Catoptrop-horus semipalmatus)*	Locally rare	Found in marshes and Shallow Flooding areas during winter and spring	This species is a somewhat common spring and fall migrant and uncommon wintering species at Owens Lake. There has been no evidence of breeding in dust control project areas.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.

Species	Status	Habitat	Past Noted Occurrence on Owens Lake[1]	2011 Occurrence in Phase 7a Project Area
Franklin's Gull *(Larus pipixcan)*	Locally rare	Uses ponds, shallow-flood areas, and fields for foraging, including habitat elements within the proposed project area	This species is a somewhat rare spring and a rare fall migrant at Owens Lake.	This species was not observed during 2011 surveys for new DCAs, transition areas, or buffer zones associated with the Phase 7a project.
Nuttall's Woodpecker (*Picoides nuttallii)*	Locally rare	Found in woodlands and riparian areas	Has been seen in the Owens River Delta riparian area in 2005, 2008 and 2009. Suitable habitat does not exist within the proposed project area.	There are no records of this species in Phase 7a project area. There is no suitable habitat present within the project area;

[1] Source: GBUAPCD, 2008b (Table 4.4.3-3 of the Biological Resources Technical Report)
Notes:
CNPS ranking system:
- List 1B: Rare, threatened or endangered in California and elsewhere
- List 2: Plants is rare, threatened or endangered in California but more common elsewhere.
- List 3: Plants about which we need more information.
- List 4: Plants of limited distribution

Threat ranks: 0.1: Seriously threatened in California; 2: Fairly threatened in California; 0.3: Not very threatened in California
Locally rare - Designated as locally important by Inyo County, the Audubon Society, CDFW, and/or the 1997 EIR
OBWS: Owens Basin Wetland and Aquatic Species
CR: California rare

4.3.3.4 Avian Use of Project Vicinity

A designated Nationally Significant Important Bird Area by the National Audubon Society and America Bird Conservancy, Owens Lake serves as a migratory stop-over site for shorebirds and waterfowl during spring and fall migration. Western and Least Sandpipers dominate during migration. Wilson's and Red-necked Phalaropes are common during migration particularly in fall. Thousands of waterfowl such as Ruddy Duck, Gadwall, Northern Shoveler and Mallard utilize the Shallow Flooding DCAs during migration. Use of the project vicinity by various waterbirds is much less notable in summer and winter. However, Snowy Plover and American Avocets commonly breed in dust control areas and around lake-fringing wetlands. A detailed listing of bird species observed on Owens Lake from seven lake-wide bird surveys from 2007 to 2008 is included in the Owens Lake Habitat Management Plan (LADWP, 2010b).

Bird counts for Migrating Waterfowl, Migrating Shorebirds and Diving Waterbirds were conducted on Owens Lake on March 31, May 1, and October 22, 2010. Breeding Shorebirds and Breeding Waterfowl were counted on one survey between May 24 and May 28, 2010, the middle of breeding season. Results of the bird counts are summarized by guild in **Figures 4.3-1** through **4.3-5**. Based on these data:

- Diving waterbird use of T30-1 and T36-1 was moderate; use by this guild of other proposed Transition Areas (T28N, T28S, T1A-2, T35-1, and T35-2) was low.
- Migrating shorebird use was low in all of the proposed Transition Areas.
- Migrating waterfowl use of T1A-2 was moderate; migrating waterfowl were also observed, in low numbers, in T30-1 and T36-1 but not in the remainder of the proposed Transition Areas.
- Breeding shorebirds were observed in low numbers in all of the proposed Transition Areas; most tend to use other DCAs.
- Without existing water, bird use was not observed in the new Phase 7a DCAs (T1A-3, T1A-4, T12-1, T32-1, T37-1, and T37-2).

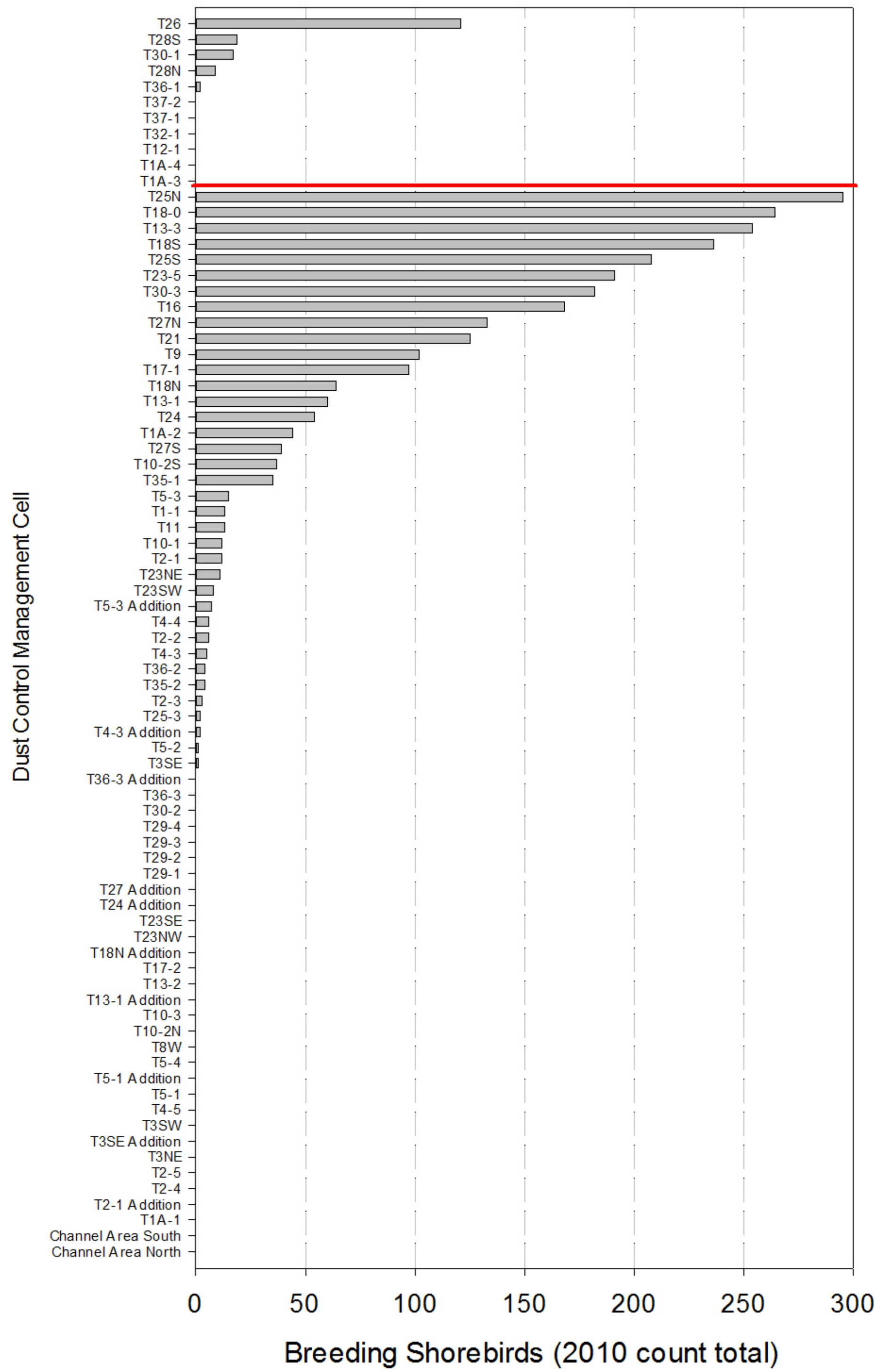


Figure 4.3-1
Breeding Shorebirds

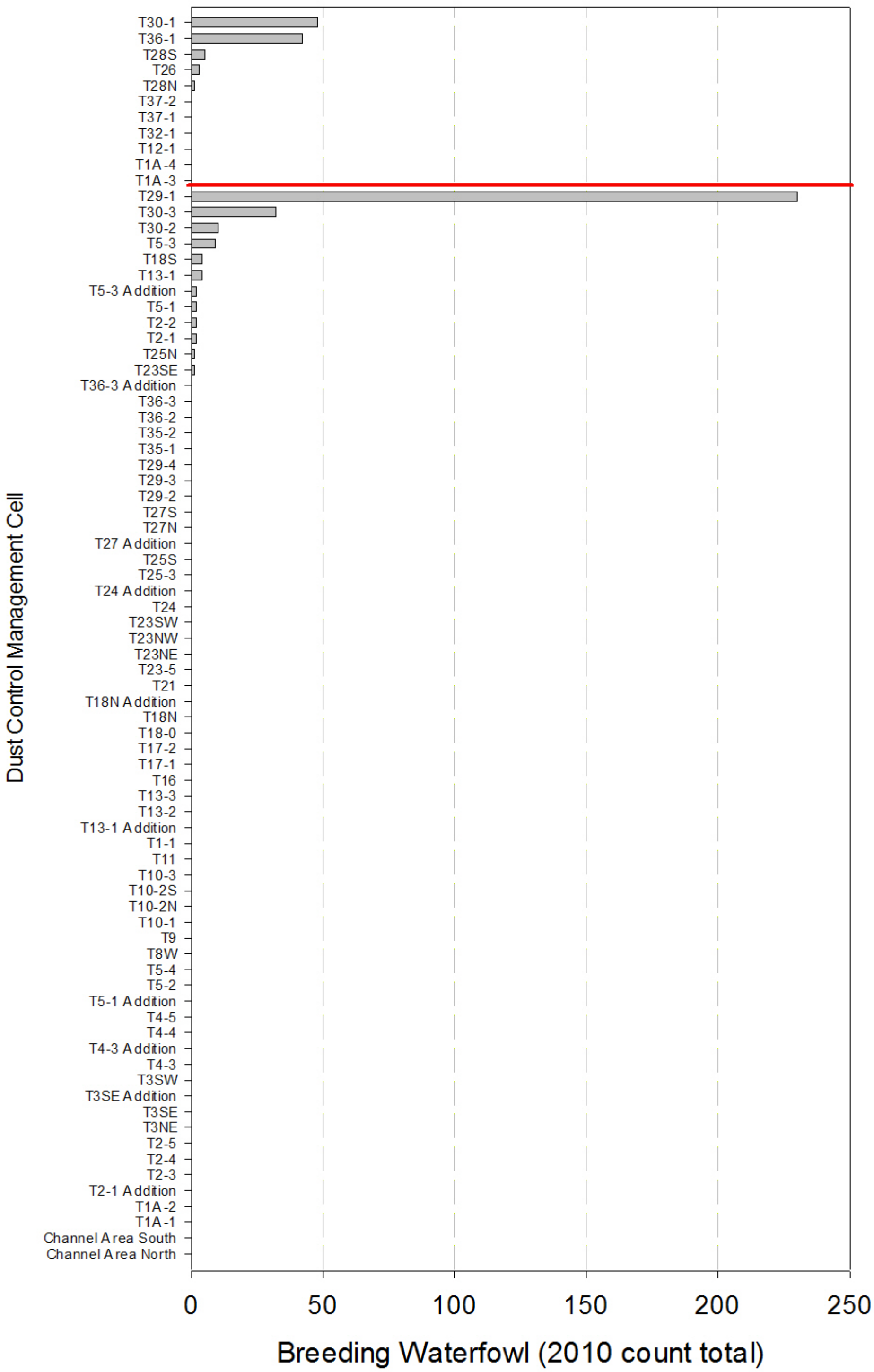


Figure 4.3-2
Breeding Waterfowl

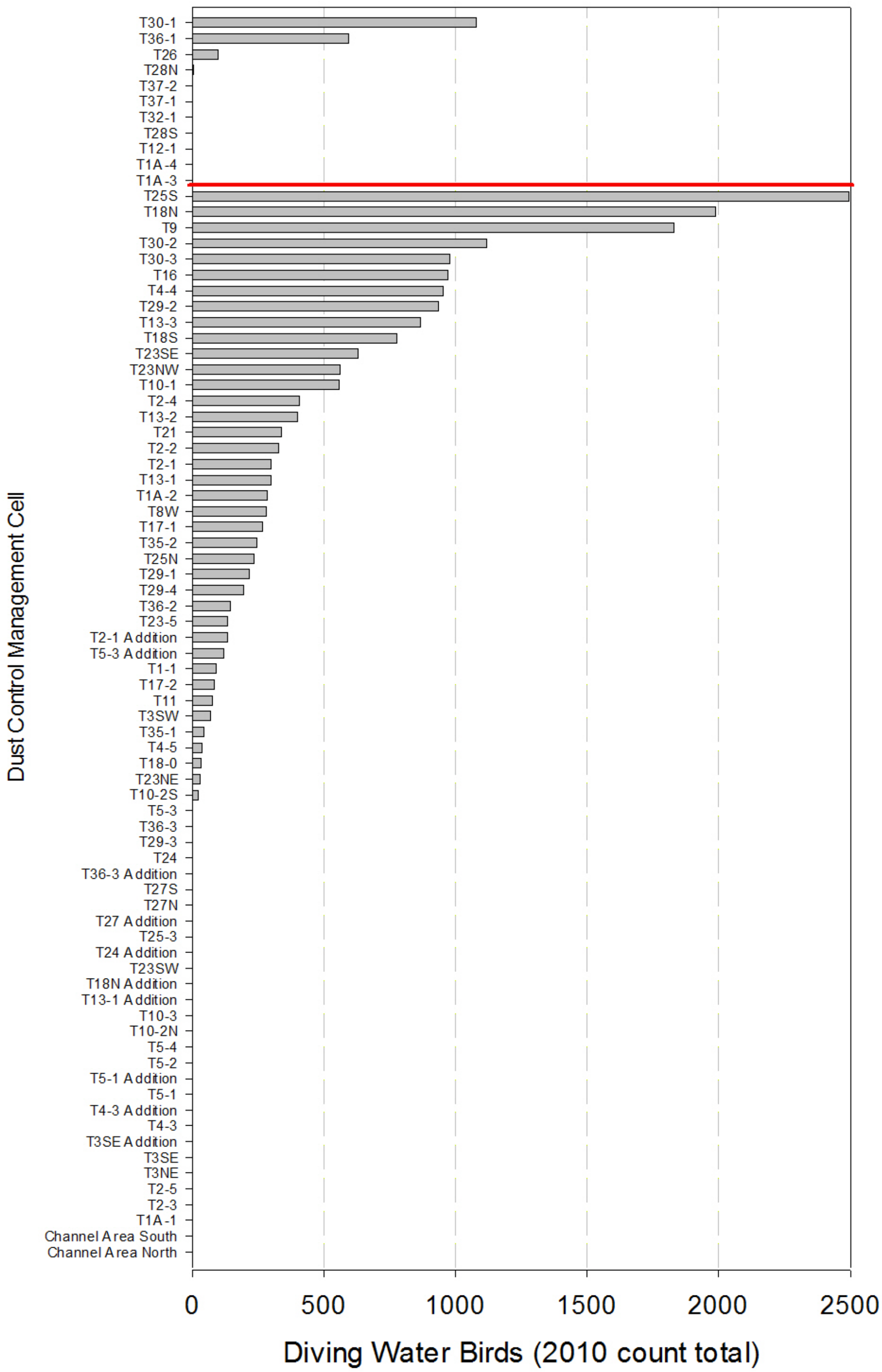


Figure 4.3-3
Diving Water Birds

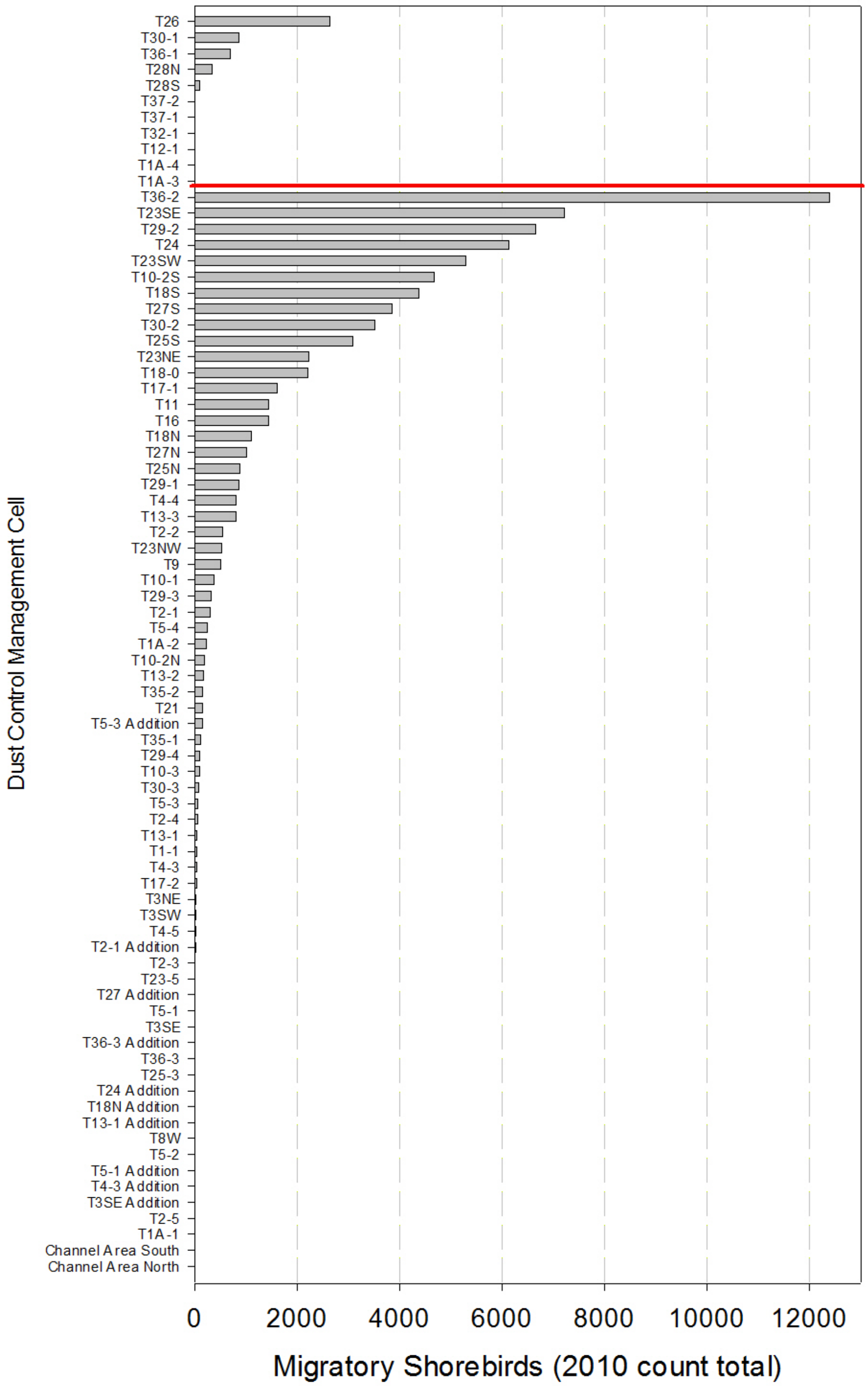


Figure 4.3-4
Migratory Shorebirds

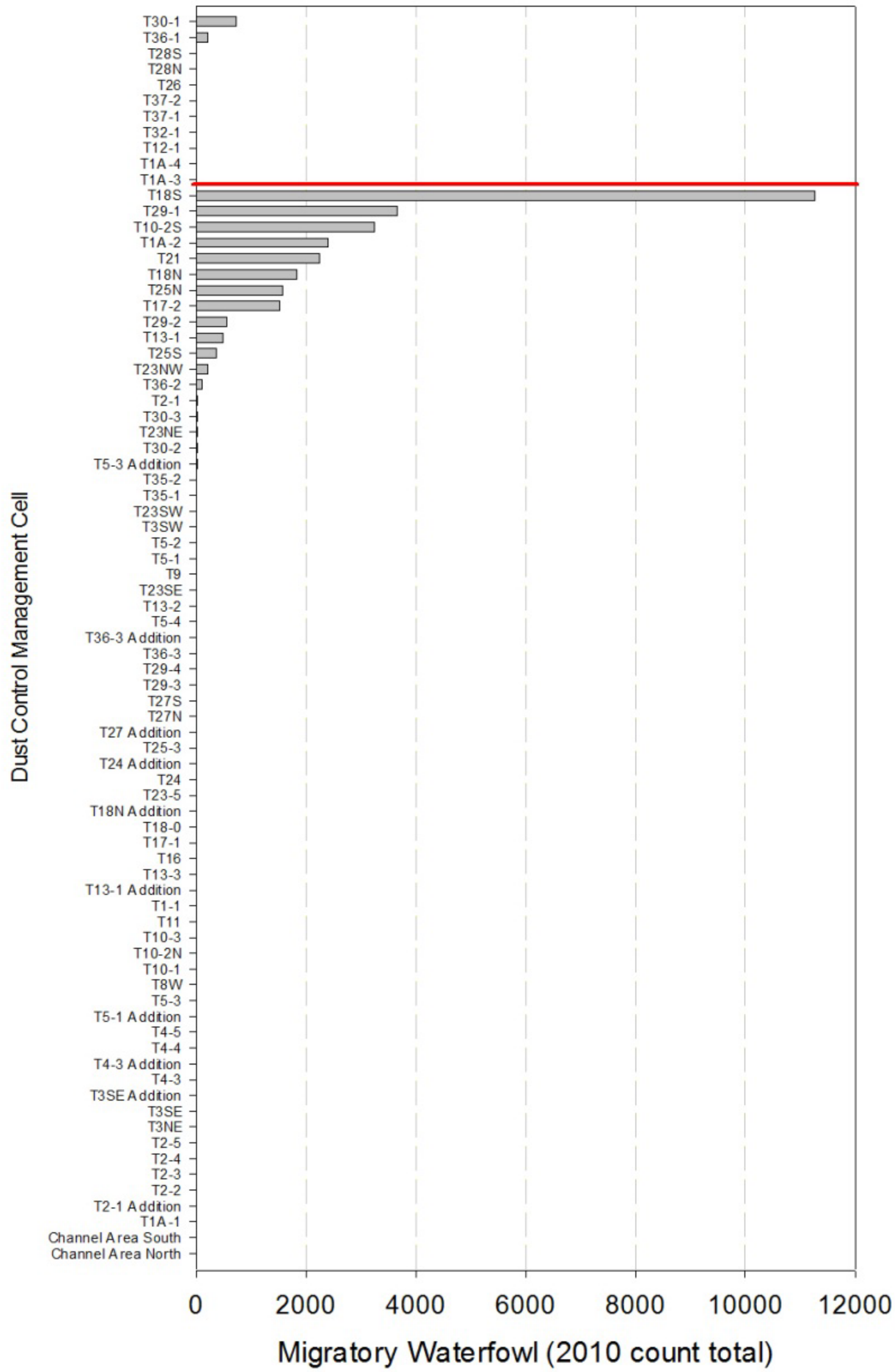


Figure 4.3-5
Migratory Waterfowl

4.3.4 Significance Criteria

Based on State CEQA Guidelines, Appendix G, significant impacts to biological resources (direct or indirect), may occur if a project action:

- Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Has a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

4.3.5 Impacts

The following analysis considers impacts from installation of dust control on 3.1 square miles of the Phase 7a area and transition of 3.4 square miles of existing Shallow Flooding to a mix of BACM to conserve water (original Phase 7a Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which will reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. Since the Avoidance Alternative would result in less impacts than the original Phase 7a Project, the following analysis presents a worst-case impact assessment.

4.3.5.1 Summary of Impacts to Vegetation Types

The Phase 7a project will alter approximately 4,100 acres of Owens Lake through construction involving land leveling; earthwork necessary for berm, roadway, and pipeline installation; installation of Gravel Cover; installation of irrigation systems; or vegetation planting. Overall, approximately 1,914 acres of barren alkali playa, 26 acres of saltbush scrub, and 6 acres of alkali meadow currently present in the new DCAs will be disturbed by tillage, berm and roadway construction, installation of Gravel Cover, or installation of irrigation systems necessary for Managed Vegetation and Shallow Flooding. Note that approximately 4 acres of alkali meadow present in the T37-2 area (where drainage from Bartlett Well occurs) is avoided by project design. Additionally, portions of approximately 2,171 acres currently under shallow flooding dust control will be modified as part of the project. Land cover inside of these shallow flood cells consist of 517 acres of dry alkali playa, 492 acres of alkali meadow, 400 acres of standing water and 763 acres of saturated soil. Note that the 1.3 acres of alkali meadow (native meadow not created by OLDMP) in T1A-2_a is outside of the project construction area and will not be disturbed. In addition to land and vegetation disturbance, construction activity could impact wildlife, through direct disturbance or indirectly from construction noise. After project completion, the locations of water available to birds and other wildlife on the lake will be altered.

Once constructed, the Phase 7a project will provide approximately 1,100 acres of Gravel Cover and tilled area, up to approximately 1,400 acres of Managed Vegetation BACM, and approximately 1,600 acres of Shallow Flooding BACM. The Managed Vegetation area will have up to 330 acres seeded with dry alkali meadow species dominated by shrubs, and up to 1,090 acres seeded with alkali meadow species dominated by grasses. Shallow flooding will contain up to 347 acres of ponded area, and up to 1,335 acres of lateral shallow flooding (**Table 4.3-6**). Existing ponded area greater than 10 cm depth is present in T35-1, T35-2 and T30-1. With the project, this pond area in T35-1 and T35-2 will be removed, but two new ponds will be created in T28. Post-project, T30-1 will have similar pond depths, new habitat islands and a length of greater usable shoreline. These cover types have been designed to be distributed in a manner favorable as wildlife habitat. For example, gravel is placed in patches adjacent to water to provide potential nesting and loafing habitat for shorebirds and loafing habitat for waterfowl as opposed to large expanses of gravel BACM which currently exists on Owens Lake (e.g., Phase 8).

Table 4.3-6
Summary of Existing Vegetation Conditions vs. Expected Conditions with the Phase 7a Project (acres)

Summary of Existing Conditions (acres)					Summary of Anticipated Future Conditions (approximate acres)				
DCA	Barren Playa	Desert Saltbush Scrub	Alkali Meadow	Open Water and Saturated Soil	Unvegetated (Gravel and Tillage)	Vegetated - Shrub Dominated	Vegetated - Meadow	Open Water in Ponds	Lateral Shallow Flood (contains saturated soil and open water)
T1A-2_a	62.1		1.3	196.6			200		60
T28N	160.7		62.1	229.7	80	60	160	60	100
T28S	102.8		34.4	116.2	60	20	40	80	100
T30-1	129.8		357.0	204.9		80	330	160	120
T36-1_b	48.5		38.0	222.3		30	270		
T35-1	5.0			62.4	70				
T35-2	8.6			82.5	90				
T1A-3	489.2	13.2			500				
T1A-4	615.5			1.5					615
T12-1	211.9				200				
T32-1	95.6	5.9				90	10		
T37-1	131.0	6.4			85	40			
T37-2	371.5	0.2	5.7			10	80		340
Total	**2,432.2**	**25.7**	**498.5**	**1,116.1**	**1085**	**330**	**1090**	**300**	**1335**

4.3.5.2 Temporary Construction Impacts

In addition to the permanent changes within the Phase 7a DCAs, the project will result in temporary disturbance of areas immediately around select DCAs from berm reconfiguration. Note that berm alternations are not required in all Transition Area DCAs. A water supply pipeline is also proposed from T36 to T37-2 and an access roadway will be improved. **Table 4.3-7** summarizes the vegetation types present in the temporary disturbance areas.

Table 4.3-7
Temporary Disturbance - Buffer areas around Phase 7a DCAs, Water Supply Pipeline, and Access Roadway (acres)

DCA	Barren Playa	Desert Saltbush Scrub*	Alkali Meadow	Saturated Soil or Open Water
T28N Buffer T28S Buffer T30-1 Buffer	8.65	0	2.8	1.08
T1A-3 Buffer	14.9			
T1A-4 Buffer	13.3			
T37-1 Buffer	6.2	2.1		
T37-2 Buffer	25	0.2	1.5	
Pipeline Option B	44.1	0.3		
Pipeline Option C	40.0			
Total (acres)	156.5	2.3	3.4	1.5

Source: LADWP, 2011

General Impacts on Wildlife Habitat

The wildlife that use Owens Lake and the dust control project area can be organized into species guilds or species with similar habitat requirements, and therefore habitat use at Owens Lake. These guilds are: migrating waterfowl, breeding waterfowl, migrating shorebirds, breeding shorebirds, diving waterbirds, and alkali meadow species (LADWP, 2010). The diving waterbird guild consists of waterfowl that may dive when foraging, the most abundant being the Ruddy Duck, and the taxonomically unrelated Eared Grebe. Migrating waterfowl includes all members of the Family Anatidae, which includes all species of swan, goose, dabbling duck, with the exception of diving ducks and mergansers which are placed in the diving waterbird guild. The breeding waterfowl guild includes all species of dabbling ducks which have been known to breed on Owens Lake including Mallard, Gadwall, Northern Pintail, Cinnamon Teal, and potentially Green-winged Teal. The migrating shorebird guild includes all members of the Order Charadriiformes excluding the family Laridae (gulls) and includes plovers, stilts and avocets, phalaropes, and all sandpipers (Family Scolopacidae). The breeding shorebird guild includes all members of the Order Charadriiformes, which may breed on Owens Lake. This includes Snowy Plover, Black-necked Stilt, American Avocet, Killdeer, and potentially Long-billed Curlew. The alkali meadow guild includes all species associated with alkali meadow communities including various reptiles, amphibians, mammals and birds that use meadow habitats. Species typically associated with meadow habitats on or adjacent to Owens Lake include reptiles such as Side-blotched Lizard, Gopher Snake; mammals such as Botta's Pocket Gopher, Deer Mouse; and birds such as Northern Harrier, Savannah Sparrow, and Western Meadowlark.

Migrating Waterfowl

Migratory waterfowl use of T1A-2 is moderate and typically occurs in the tailwater pond down gradient of the proposed project area, the majority of which will not be impacted by the project. The designations of _a and _b are portions of a larger management cell. The management cell as a whole is the unit surveyed for waterbirds. The Phase 7a project areas are the up gradient and mostly sheet flow portions of T1A-2 and T36-1 that contain lateral lines and not the large pond.

The project will convert some existing Shallow Flooding to Gravel Cover. The acreage of standing water pre-project is currently about 400 acres (in May) and after the project there will be approximately 347 acres of ponds. Unlike current ponds with straight shoreline designed solely for dust control, new ponds will be designed with shallow foraging areas adjacent to loafing resting areas with an undulating shoreline. Along with these newly designed ponds, additional vegetation will provide enhanced resources for foraging. The design of ponds will also incorporate the ability to better manage salinity. Design will incorporate the ability to move water (with salts) from higher elevation ponds to lower elevation ponds to facilitate maintaining optimal salinity for vegetation and waterfowl foraging resources in upper ponds. Currently brine is recirculated through T28N and T28S. Improvements to the existing brineline are also proposed to move saline tail water to other parts of the dust control project, thus allowing management of salinity in some lower elevation ponds that are typically hypersaline. This will also allow for better salinity management throughout the North Sand Sheet.

Additionally, habitat islands are proposed for Transition Areas T28N, T28S, and T30-1. The addition of islands to these shallow flood cells in the dust control project area will increase the diversity of habitats for foraging and loafing and will also serve to increase predators search efforts.

Breeding Waterfowl

Similar to migratory waterfowl, the habitat produced by the project will benefit breeding waterfowl. Fresh water in many ponds adjacent to vegetation will provide additional habitat diversity in the form of vegetation cover and shoreline foraging areas. The alkali meadow vegetation provided by the project will also provide for additional nesting opportunities. Additionally, habitat islands are proposed for Transition Areas in T30-1 and T28N and T28S. The diversity and placement of islands within cells should improve the attractiveness for nesting and may also provide some protection from predation as this will serve to increase predators search efforts. In T30-1 the islands proposed for construction are located around historic Owens Lake spring mounds inundated by previous construction of current ponds. Therefore it is likely these islands will have the ability to grow vegetation and maintain herbaceous structural diversity important for waterfowl nesting. Dense herbaceous or emergent vegetation may develop particularly in T30-1 and T36-1 due to the low salinity which could support nesting by Gadwall, Cinnamon Teal, Green-winged Teal, and Mallard.

The islands in the ponds will produce additional shallow water foraging habitat adjacent to dry and occasionally vegetated loafing and resting habitat on these islands. These types of habitats are often seen utilized by LADWP biologists in T30-1 where remnant spring mounds currently exist. The design of T30-1 is meant to enhance these high-use areas in both quantity and quality to provide for additional waterfowl use.

Migrating Shorebirds

Habitat for migrating shorebirds in the project area should remain similar to pre-project conditions. Ponds will remain and be better managed for optimal salinity (as discussed for waterfowl) for long-legged shorebirds such as American Avocet and Whimbrel. The design of proposed ponds is intended to increase shoreline habitat available with increased sinuosity compared to pre-project ponds and will be contoured and sloped such that a large area of shallow water occurs adjacent to the shoreline. This does not occur in current ponds in T35 (which will be taken out of operation) and only currently occurs in portions of the pond in T30-1. Saturated soil and shallow water will also increase as part of the project from 763 acres, during 2010 sampling, to approximately 910 acres (75 percent wet of 1214 acres of proposed lateral shallow flood).

Breeding Shorebirds

Breeding shorebirds require similar habitat to migrating shorebirds with the added need for nesting habitat. Approximately 166 acres of gravel in transition areas will be placed adjacent to foraging habitat in transition areas. These open areas should provide dry areas where nesting may potentially occur by ground nesting birds such as American Avocets, Snowy Plover and Horned Lark. Snowy Plover consistently nest on graveled roads throughout the Dust Control Area typically adjacent to shallow flood.

Additionally, habitat islands are proposed for select Transition Areas. Placement of islands within cells may improve the attractiveness for nesting, particularly for American Avocet. The addition of islands to shallow flood cells in the dust control project area will increase the diversity of nesting habitat adjacent to foraging habitat available for shorebirds. Increasing the number of islands may also provide some protection to nesting birds as this will serve to increase predators’ search efforts.

As areas of alkali meadow vegetation develops, shorebirds such as Long-billed Curlew and Wilson’s Phalarope, which are not known to currently nest in the project area, may find suitable nesting habitat.

Diving Waterbirds

Based on the bird abundance data for 2010 summarized above, diving waterbird use of proposed Transition Areas T30-1 is moderate compared to other DCM cells. Diving waterbird use is also moderate in T36-1 but typically occurs in the non-project area of the cell which is the large pond down-gradient. The ponded water habitat used by diving waterbirds in the down gradient ponds in T1A-2 and T36-1 may decrease by a small proportion (11 acres and 8 acres, respectively) however large ponds in both cells will remain. T1A-2 will continue to contain a pond over 200 acres and in T36-1 two ponds will remain (each over 100 acres). T30-1 will be constructed with a similar depth to pre-project conditions with the addition of an approximately 25 acre deep area. T35-1 and T35-2, which are typically saline and receive little waterbird use, will be converted to Gravel Cover. In order to maintain pond area, two ponds each over 40 acres will be created in T28N and T28S under the proposed project.

While the total acreage of ponded water will decrease with the project by approximately 53 acres (standing water pre-project of 400 acres as compared with 347 acres of ponds post-project), the number of ponds larger than 40 acres will remain the same, the size of ponds typically utilized by diving waterbirds. Additionally the ability to manage the conditions of the existing and newly created ponds will increase. Management of pond salinity and the location of deeper water areas in proximity to productive shallow areas is expected to increase habitat suitability within DCAs.

Overall, the suitability of the habitat for breeding shorebirds, breeding waterfowl, migrating shorebirds, migrating waterfowl and diving waterbirds will increase.

Alkali Meadow Guild

Overall, implementation of the proposed project will more than double the acreage of vegetation currently present in the Phase 7a project area, and increase the overall plant species diversity. In addition to saltgrass, 39 species have been proposed to increase the ability to meet the cover requirements for Managed Vegetation BACM which will create additional habitat diversity of the Managed Vegetation areas. This increased number of plant species will provide additional resources beyond the single species monoculture of current Managed Vegetation. These additional species add foliage height diversity to the new Managed Vegetation areas in terms of growth form and height. Species such as *Poa secunda* and *Schoenoplectus (Sciurpus)* spp. provide additional height and longer leaves for use by wildlife for nesting and escape cover not provided by low stature saltgrass. Yerba Mansa proposed for planting in some transition areas, while having many ethnobotanical uses, has a different growth form compared to many other species with broad fleshy leaves that will provide additional habitat diversity for alkali meadow species. Additional flowering plants that offer a nectar source for insects such as *Heliotropium curassavicum* and *Cordylanthus maritimus* are also included in the species list. Along with grasses and other herbaceous species, shrubs have been included in the proposed species list (e.g. greasewood and Parry's saltbush) that provide more diverse structural and foraging resources than herbaceous species, as well woody perches for small passerines and potential nesting sites for shrub nesting birds.

With the increased plant species richness and structural diversity provided by the expanded Managed Vegetation BACM species list, these additional plant species will provide an increase in the amount and variety of seed production for granivorous species such as harvester ants (*Pogonomyrmex* spp., weevils (Family Curculionidae) and some birds (e.g., sparrows and finches). These resources in turn offer foraging resources for insectivorous species that glean insects from foliage (e.g., Marsh Wren) and birds that forage on the wing (e.g., various swallow species).

While the exact density, cover, and composition of vegetation in the project areas cannot be predicted, the overall increase in vegetation is expected to provide habitat for additional alkali meadow species. To facilitate vegetation growth, brine from shallow flood operation in T28N and T28S will no longer be recirculated and instead will be moved to other areas of the Dust Control Project to manage salinity in large ponds. This will allow the salts in the soils in areas planned for Managed Vegetation to leach out, thus allowing more diverse vegetation to establish. This is similar to current operation in T30-1.

With the overall increases in vegetated area, increases in plant species diversity, and increase in the habitat diversity of DCAs compared to current homogenous shallow flooding and large expanses of barren emissive playa, benefits to wildlife species other than birds are anticipated.

Since cover from predation and thermal extremes appears to be a limiting resource for reptiles (LADWP, 2010) the use of the project areas by reptiles may also increase due to the increased cover of vegetation and rock, such as rip rap and gravel.

Various small mammals, such as rodents (e.g., White-footed Mice and Owens Valley Vole), may also benefit from increases in vegetative cover and food production in the form of seeds and cover, predicted under the proposed project.

Foraging habitat for various bat species may also increase due to additional vegetated foraging areas, but the project will not create roosting opportunities.

4.3.5.3 Direct Impacts to Wildlife Species

Several common bird species may nest in the vicinity of the lake bed. The Migratory Bird Treaty Act (MBTA) protects migratory birds, their nests, and eggs. If construction is initiated during the peak bird nesting season (i.e., March 15 to August 15), it could impact nesting birds protected by the MBTA. The loss of any active bird nest would be considered a potentially significant impact. Implementation of mitigation measure BIO-5 would reduce this impact to a less than significant level.

4.3.5.4 Impacts to Sensitive Species

Sensitive Plant Species. As summarized in **Tables 4.3-3** and **4.3-5**, one state endangered and 16 locally important plant species have the potential to be present in project region. Based on the surveys conducted in April and May 2011, review of relevant literature, and LADWP staff knowledge of the Owens Lake environment, none of these species were observed to be present on the Phase 7a project areas and none are anticipated to occur on the project sites. In most cases, habitat suitable to support these plant species is not present in the Phase 7a areas. There are records of Owens Valley checkerbloom at Willow Dip, and Parish's popcorn-flower at Willow Dip and Ash Creek spring. However, these areas will not be disturbed by the project. Therefore, since none are known for the project sites, construction and operation of the Phase 7a project would have no impact on sensitive plant species.

***Locally Important Invertebrates*.** As summarized in **Table 4.3-5**, eight locally important invertebrate species have the potential to be present in project region. None of these species were observed during 2011 surveys of the Phase 7a project areas. Six species were determined absent during 2007 surveys. Owens valley tiger beetle was observed in the Channel Area in 2007, near the Phase 7a DCAs T1A-3 and T1A-4. Increases in saturated areas may increase the abundance and distribution of some tiger beetles. Records for Wong's springsnail are known from Northwest Spring (adjacent to Owens Lake). CDFW notes springsnails at off-lake springs closer to Lone Pine. Springs will not be disturbed as part of construction for the Phase 7a project. The project will not alter flow patterns to any spring that may contain springsnails. Once constructed, the Phase 7a project will increase the overall acreage of alkali meadow present the lake, potentially increasing habitat for invertebrates found there (moth, skipper, tiger beetles). Therefore, construction and operation of the Phase 7a project would have a less than significant impact on locally important invertebrates.

***Sensitive Fishes*.** As summarized in **Table 4.3-3** and **4.3-4**, two endangered and two sensitive fish species have the potential to be present in project region. None of these fishes are known for the project site and suitable habitat is not present on the Phase 7a parcels; fish are not present in the Shallow Flooding ponds. The project would not alter flow patterns to any off-site waterways that may contain these species. Therefore, construction and operation of the Phase 7a project would have no impact on sensitive fishes.

Sensitive Reptiles and Amphibians. As summarized in **Tables 4.3-3** and **4.3-4**, one threatened reptile, two sensitive amphibians, and one BLM sensitive reptile have the potential to be present in the project region. An adult desert tortoise was observed east of Owens Lake over 15 years ago; this species has not been observed on the lake. The Sierra Nevada yellow-legged frog and Inyo Mountains slender salamander have not been documented on the valley floor and are not known to occur on the project site. Suitable habitat for the northern sagebrush lizards is not present on the Phase 7a parcels. Therefore, construction and operation of the Phase 7a project would have no impact on sensitive reptile or amphibian species.

***Sensitive Bird Species*.** As summarized in **Tables 4.3-3, 4.3-4** and **4.3-5**, three listed, 11 sensitive and three locally important bird species have the potential to be present in the project region. Although suitable habitat is not present in the six new Phase 7a DCAs, transient use by Bald Eagle is possible in the Phase 7a Transition Areas. No suitable nesting habitat is present in the Phase 7a area for Swainson's Hawk, although transient foraging is possible in the new or transition areas. Northern Harriers have not been observed in the Phase 7a project areas, but these species were observed on the lake in 2011. Suitable foraging habitat is present in Transition Areas for Western Least Bittern. Mountain plover is a possible fall migrant, with potentially suitable wintering habitat in the Transition Areas. Although not noted during the Phase 7a 2011 surveys, Burrowing Owls have been observed during the Audubon Big Day Count and there is potentially suitable habitat found in the Phase 7a project areas. There is potentially suitable nesting habitat for Loggerhead Shrike adjacent to Phase 7a project areas.

A breeding population of Snowy Plover occurs on Owens Lake and plover nests have been documented adjacent to Transition Areas. At Owens Lake, the breeding habitat of the Snowy Plover appears to be open, dry playa within 0.5 miles of springs, seeps, outflows, or shallow flooding that supports invertebrate production. A previous habitat assessment for the 2009 Moat and Row SEIR evaluated the Phase 7a areas and identified the Transition Areas as high-suitability snowy plover habitat; T32-1 and some of T1A-4 as potential habitat; T12-1 and some of T1A-4 as not potential habitat; and most of T37-1, T37-2 and T1A-3 (and the western portion of T1A-4) as high-suitability habitat. Note that this designation did not incorporate parameters such as percentage of flooding or vegetation. The designation of "high suitability" was relative to nests in other new Phase 7a areas which are minimal compared to the dust control area as a whole. During the 2011 lake-wide survey, 544 adult Snowy Plovers were observed (98 in the north region, 288 in the central region, 73 in the south region and 85 in the west shore region) (LADWP, 2011). With the exception of three adults in T36-1, no plovers were observed during the 2011 survey in the Transition Areas. One adult was observed in Corridor 1, which will be used as a transportation route for the Phase 7a project.

If present, Phase 7a construction and maintenance activity could subject Snowy Plovers to noise, vehicular traffic and foot traffic. Continued or repeated disturbance of nesting birds can result in nest failure. While transition areas and now areas have low use of Snowy Plover loss of nests, disturbance to breeding and foraging activities, and mortality of individuals due to ground disturbing activities could occur. During project construction, plovers could be killed or injured by vehicle traffic or active nests could be crushed beneath heavy construction equipment. Therefore, potential disruption of snowy plovers during construction and maintenance of Phase 7a would be a significant impact.

Construction activity could disrupt foraging by sensitive bird species, if any are present near the construction zones. Transition Areas taken out of operation for earthwork and installation of irrigation systems and vegetation planting will temporarily alter the availability of water on the lake. However, over 30 square miles of shallow flood will remain in operation and unaffected by the project. Construction of the Phase 7a project will occur over 2 years, and all Transition Areas will not be taken out of operation simultaneously. Impacts on foraging by sensitive bird species, if any, will be temporary. After construction of the project, the acreage of suitable habitat and the quality of transition and new areas will be increased over existing conditions, which should increase foraging and nesting opportunities. Successful nesting by sensitive bird species other than Snowy Plover is not known for the Phase 7a project areas. However, Burrowing Owl and other sensitive bird species nests, if any, could be impacted by project construction and maintenance activities. Therefore, potential disruption of sensitive bird species nests during construction and maintenance of Phase 7a would be a significant impact.

Implementation of mitigation measures BIO-1 through BIO-5 during project construction, and subsequently during project maintenance activities, will reduce impacts to sensitive bird species to a less than significant level.

Once construction is complete, future use of the Phase 7a project areas by Snowy Plover is anticipated. The Transition Areas will increase the variation in topography important for Snowy Plover nesting (LADWP, 2011). The large, shallow and topographically variable wetlands that will result from the project are anticipated to have more species diversity than the existing areas with less variable topography and low habitat diversity Shallow Flooding DCAs. New DCA's will have additional water and foraging resources not present on the barren playa. Additionally controlling sand movement in these new areas, along with reducing dust emissions, will allow for additional nesting area as potential nesting areas will not be sporadically buried by moving sand. Therefore, the overall increases in ponded or saturated area and vegetation will increase foraging and nesting habitat for Snowy Plover and other shorebird species. The proposed areas of Gravel Cover may also be used by Snowy Plover for nesting. Multiple snowy plovers have been found using the areas along the existing gravel Corridor 1 and commonly nest on gravel roads adjacent to shallow flood elsewhere on Owens Lake. Overall, the impact of project operation is beneficial for sensitive bird species.

Sensitive Bat Species. As summarized in **Table 4.3-4**, eight sensitive (CSC and BLM sensitive) bat species have the potential to be present in project region. All eight of these species may forage over existing Shallow Flooding ponds. However, potential roosting habitat (rock crevices or hollow trees) is not present on the Phase 7a project sites. Bat foraging in Shallow Flood areas would not be expected to be directly impacted during construction of the Phase 7a project since construction activity will occur primarily in the daytime. However, the draining of ponds for earthwork and installation of irrigation systems and vegetation planting will temporarily alter available water on the lake and therefore potentially alter availability of forage for the bats. Construction of the Phase 7a project will occur over 2 years, and all Transition Areas will not be drained simultaneously. Additionally, the over 30 square miles of other Shallow Flooding DCAs present on the lake will not be impacted by the project. Impacts on sensitive bat species, if any, will be temporary. After construction of the project, the acreage of pond and saturated areas will be increased over existing conditions and therefore forage for bats may increase. Therefore, construction and operation of the Phase 7a project will have a less than significant impact on sensitive bat species.

Other Sensitive Mammals. As summarized in **Table 4.3-2**, one endangered (big horn sheep), one threatened (Mohave ground squirrel), and three sensitive mammal species other than bats have the potential to be present in the project region. Sierra Nevada bighorn sheep inhabit alpine meadows, grassy mountain slopes and foothill country near rocky cliffs and bluffs. They are not expected to occur on or near the project site since they are rarely observed on the valley floor. Mojave ground squirrel has been observed south of Owens Lake but suitable habitat is not present on the Phase 7a project areas. [Note that construction of a gravel conveyor from the LADWP shale pit to the Owens Lake is not included in the proposed project and therefore surveys to determine the presence or absence of Mohave ground squirrel east of the lake were not conducted.] Suitable habitat for southern grasshopper mouse and American badger is not present in the Phase 7a project areas. Owens Valley vole, a subspecies of the California vole, is known from wetlands, grasslands, and other grass-dominated sites and has been observed in Swedes Pasture and Dirty Socks Spring. Suitable habitat is not present in the six new Phase 7a DCAs and the species is considered unlikely to be present in the Transition areas. Once constructed, the Phase 7a project will increase the overall acreage of vegetation present on the lake, potentially increasing habitat for Owens Valley vole. Therefore, construction and operation of the Phase 7a project would have a less than significant impact on sensitive mammal species.

4.3.5.5 Impacts to Sensitive Natural Communities

Dry alkali meadow and wetlands are the sensitive natural communities present in the Phase 7a project areas. The Phase 7a area contains wetlands areas that could potentially fall under federal jurisdiction (Clean Water Act Section 404 administered by the U.S. Army Corps of Engineers) such as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support wetland vegetation. Wetland delineations were conducted where hydrophytic vegetation occurred at greater than 5 percent cover in areas that could be impacted under the Phase 7a project. Wetland delineations followed the methods described in the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual and 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Wetland indicator status is identified by species in the National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary (National Wetlands Inventory 1997). Indicators that are Obligate (OBL), Facultative Wetland (FACW), and Facultative (FAC) are considered hydrophytic and are typically adapted for life in anaerobic soil conditions. The wetland delineation team selected sampling areas that were representative of varying vegetation communities and soil conditions to provide a comprehensive look at current conditions in the Phase 7a project area on Owens Lake.

Extensive man-induced wetlands are a result of LADWP dust control efforts in several DCAs, particularly on the northeast side of the lake. These wetlands exhibit wetland hydrology, hydrophytic vegetation, and hydric soils, yet they cannot be sustained without the artificial addition of water to the cells through current dust control. Wetland conditions observed in the Phase 7a project area in 2011 are summarized above in **Table 4.3-1**. [A wetland delineation summary is provided in Appendix A of LADWP, 2011a.] No riparian habitat or other sensitive communities occur within the Phase 7a project area.

Natural alkali meadow present in the Phase 7a area (approximately 4 acres in T37-2, not delineated but potentially wetland), will not be disturbed by project construction; the area is avoided by project design. Man-induced (created) wetlands are present in T28N (56.7 acres), T28S (33.4 acres), T30-1 (356.7 acres), and T36-1_b (36.6 acres). In T28N and T28S, grading to reconfigure the DCAs will disturb existing vegetation. However, no mass grading is proposed for the existing vegetated area of T30-1 – primarily existing irrigation systems will be used and the existing 43.5 acre created wetland will be completely avoided by project construction. Under the proposed project, T30-1 will be irrigated in a similar manner to existing conditions and the area of mixed alkali meadow is likely to be of wetland character. Therefore, the majority of the existing 313.2 acres of wetlands (plus the 43.5 acre wetland mitigation area) are anticipated to remain as created wetlands. In T36-1_b, sprinklers will be installed and earthwork will be required for the creation of broad beds (broad beds 24 ft wide and furrows 6 ft wide). Therefore, the area of created wetlands potentially disturbed by construction of the proposed project is on the order of 136 acres.

Overall, Phase 7a project areas that are currently vegetated will continue to be vegetated after construction of the proposed project. Additional areas will be seeded and irrigated to achieve additional acres of Managed Vegetation. Since the success rate of vegetation establishment is unknown, and since the hydrologic regime will be determined based on dust compliance, the exact acreage of wetlands created under the project cannot be predicted. Whether specific areas that currently meet Corps of Engineers criteria as wetlands will continue to exhibit all three wetland characteristics (hydrology, soils and vegetation) is unknown. The existing wetland areas are created wetlands, dependent on artificial hydrologic regimes. It is anticipated that the Corps of Engineers will not exercise regulatory jurisdiction over these areas since the wetlands are man-induced and, under existing conditions, the hydrologic regime has been managed solely for dust control, outside of the wetland mitigation area. Coordination with the Corps of Engineers on this issue was conducted in June 2011; LADWP will continue to coordinate with them to confirm the anticipated exemption. Coordination with CDFW is also on-going as part of the Owens Lake Master Planning Committee.

The proposed project will increase the overall vegetated area on the lake, as well as increase the habitat values of the vegetated areas. Some of these areas will continue to meet Corps of Engineers wetland criteria. Since the proposed project will increase vegetated area and increase habitat value of the vegetated areas, the impact on sensitive plant communities is beneficial.

4.3.5.6 Impacts to Wildlife Corridors

There are no known migration corridors for mammals within the Phase 7a project area. Tule elk calving is known in the Owens River Delta. During calving, cows and calves would not be expected to stray far from vegetative cover and forage. Tule elk have also been observed in the Northwest Seep area. Tule elk would not be expected to move across the Phase 7a project areas on any regular basis. There are no known or documented migration corridors for small terrestrial mammals or medium-sized mammals on Owens Dry Lake (GBUAPCD, 2008b).

Owens Lake is an important site along the Pacific Flyway for migratory waterbirds. Potential impacts to Snowy Plover and other nesting birds are discussed above. Overall, the impact from construction and operation of the Phase 7a project on wildlife migration corridors and nursery sites will be less than significant.

4.3.5.7 Impacts Related to Invasive Species

Several noxious weed species, such as salt cedar (*Tamarix ramosissima*) and Russian olive (*Elaeagnus angustifolia*) are present in the project vicinity (e.g., the Owens River Delta and the town of Keeler). Other species of potential concern are: sandbur (*Cenchrus* spp.), hoary cress (*Cardaria* spp.), halogeton (*Halogeton glomeratus*), puncturevine (*Tribulus tetrestris*) and perennial pepperweed (*Lepidium latifolium*). By expanding the vegetated area on the lake, implementation of the proposed project could potentially facilitate increases in invasive species.

However, LADWP currently implements a Noxious Weed Control Program (LADWP, 2008a). Based on the reproductive cycle of the noxious weeds, field surveys are conducted semi-annually, with the first survey occurring in April - May and the second survey occurring in August - September. Additionally, LADWP Operations and Maintenance staff members are trained to identify noxious weeds as part of normal daily operations. Based on the results of the semi-annual field surveys, eradication and control measures are implemented for noxious weeds that are identified within the OLDMP area. The type of eradication and control measures used depends upon a variety of factors, including which noxious weed species are present, the size/age of the plants, the presence of native vegetation, and site conditions. Methods include: mechanical and hand removal, foliar application of herbicide (e.g., Rodeo®, Habitat®), cut-stump herbicide application, basal bark application and flooding. Herbicides are applied under the supervision of LADWP staff licensed with the California Department of Pesticide

Regulation. Following successful implementation of control measures, populations are tracked for at least one year to ensure the effectiveness of the control effort. Mapping and reporting is conducted annually. With continuation of this existing Noxious Weed Control Program, and inclusion of the Phase 7a project areas, impacts of the proposed project on invasive species will be less than significant.

4.3.5.8 Impact Summary

As discussed above, the project will not exceed biological resources thresholds of significance with implementation of mitigation measures; therefore, impacts will be less than significant.

4.3.6 Future Analysis Using Habitat Suitability Modeling

Since implementation of Shallow Flooding and Managed Vegetation DCMs, wildlife habitat has been created on the lake bed where little previously existed. The Owens Lake Bed Master Plan was initiated by LADWP to provide a tool to continue to manage dust control while maintaining habitat and conserving water. Future management of biological habitat values may be through the Master Plan process. Baseline habitat values have been identified through a Habitat Suitability model (HSM) (LADWP, 2011). The HSM hypothesize a functional relationship between the quality of a resource or variable and its suitability value for a species (Schamberger, et. al., 1982). The Owens Lake HSM may be used to monitor habitat value of individual DCAs and inform management of dust control measures on each unit. The model may be used during implementation of the Master Plan to: 1) track habitat value over time; 2) predict habitat value when planning projects on the lake; and 3) improve understanding of habitat parameters in the adaptive management process.

4.3.7 Mitigation Measures

4.3.7.1 General Approach to Mitigation for Biological Resources

In compliance with mitigation measure Biology-14 of the 2008 SIP FSEIR (GBUAPCD, 2008b), LADWP prepared the Owens Lake Habitat Management Plan (OLHMP) for the Owens Lake Dust Mitigation Project (LADWP, 2010b). The OLHMP will serve as a guide for compatibility between construction, maintenance, and operational needs of the Dust Mitigation Program under the 2008 SIP FSEIR, and the needs of resident and migratory wildlife resources utilizing the Owens Lake Dust Control Area. The overall goal of the OLHMP is to avoid direct and cumulative impacts to native wildlife communities that may result from the Dust Control Program. Implementation of Phase 7a would be consistent with the resource management actions described in the OLHMP; relevant measures are consistent with the mitigation measures listed below.

Mitigation Measures BIO-1 through BIO-4 were described in the 2008 SIP SEIR (GBUAPCD, 2008a) for the 15.1 square miles of DCMs proposed under that project. These measures are still relevant to the Phase 7a project areas. Mitigation Measure BIO-5 will reduce impacts on other nesting birds, if any are present during construction or maintenance of the Phase 7a project. To reduce impacts to biological resources to a less than significant level, the following mitigation measures shall be implemented.

BIO-1. Lake Bed Worker Education Program. To minimize potential direct impacts to Snowy Plover from construction activities, LADWP shall continue the lake bed worker education program consistent with the previous approach and per CDFW recommendations. The program shall be based on Snowy Plover identification, basic biology and natural history, alarm behavior of the snowy plover, and applicable mitigation procedures required of LADWP and construction personnel. The program shall be conducted by a biologist familiar with the biology of the Snowy Plover at Owens Dry Lake and familiar with special status plant and wildlife species of the Owens Lake basin. The education program shall explain the need for the speed limit in the snowy plover buffer areas and the identification and meaning of buffer markers. All construction, operation, and maintenance personnel working within the project area shall complete the program prior to their working on the lake bed. A list of personnel who have completed the education program shall be maintained and made available to GBUAPCD upon request.

BIO-2. Preconstruction Surveys for Snowy Plover. To minimize potential direct impacts to Snowy Plover within the project area due to construction activities, LADWP shall conduct a preconstruction survey for Snowy Plover in all potential snowy plover habitat prior to any construction activity that is performed during the Snowy Plover breeding season (March 15 to August 15). Preconstruction surveys shall be performed no more than 7 days prior to the start of ground-disturbing activities. A 200-foot buffer shall be placed around all active snowy plover nests that are discovered within the construction area. This buffer shall protect the plover nest from both destruction and construction noise. Green-colored stakes of less than 60 inches in height shall be used to mark buffer edges, with stakes spaced at approximate cardinal directions. The location of the nest (global positioning system coordinates) and current status of the nest shall be reported within 24 hours of discovery to GBUAPCD. Maps of snowy plover nest locations shall be posted at the construction office and made available to all site personnel and GBUAPCD staff. The activity of the nest shall be monitored by a biological monitor, as per existing guidelines for the North Sand Sheet and Southern Zones dust control projects and any revisions to the monitoring protocol that have been approved by CDFW. Active snowy plover nests shall be monitored at least weekly. The nest buffer shall remain in place until such time as the biological monitor determines that the nest is no longer active and that fledglings are no longer in danger from proposed construction activities in the area. Buffers shall be more densely marked where they intersect project-maintained roads. Vehicles shall be allowed to pass through nest buffers on maintained roads at speeds less than 15 miles per hour, but shall not be allowed to stop or park within active nest buffers. Permitted activity within the nest buffer shall be limited to foot crews working with hand tools and shall be limited to 15-minute intervals, at least one hour apart, within a nest buffer at any one time.

BIO-3. Snowy Plover Nest Speed Limit. To minimize potential direct and cumulative impacts to Snowy Plover and other sensitive biological resources from vehicles construction activities, LADWP shall implement a speed limit of 30 miles per hour within all active construction areas on Owens Dry Lake during construction of dust control measures. Speed limits shall be 15 miles per hour within active snowy plover nest buffers. Designated speed limits for other construction areas outside of active nest buffers shall be maintained at 30 miles per hour where it is determined to be safe according to vehicle capabilities, weather conditions, and road conditions. Site personnel and GBUAPCD staff shall be informed daily of locations where active nest buffers overlap with roads in the construction area. Signs shall be posted that clearly state required speed limits. Speed limit signs shall be posted at all entry points to the lake. The number of speed limit signs shall be kept at a minimum near active snowy plover nest areas to reduce potential perches for raptors and other snowy plover predators and shall be outfitted with Nixalite or the functional equivalent if greater than 72 inches (increased from the original 60 inches) in height at entry points to the lake and 60 inches in height by active snowy plover nest areas.

BIO-4. Lighting Best Management Practices. To minimize indirect impacts to nesting bird species associated with project lighting during construction activities, LADWP shall institute all best management practices to minimize lighting impacts on nocturnal wildlife consistent with previous requirements and CDFW recommendations. Best management practices include those listed below, and are included in the Project Description of the GBUAPCD 2008 State Implementation Plan Subsequent Environmental Impact Report. Previous construction has occurred during nighttime hours to complete construction schedules and to prevent personnel from working during times of high temperatures. If night work is deemed necessary, then construction crews shall make every effort to shield lighting on equipment downward and away from natural vegetation communities or playa areas, and especially away from known nesting areas for snowy plovers during the nesting season (March to August). All lighting, in particular any permanent lighting, on newly built facilities shall be minimized to the greatest extent possible, while still being in compliance with all applicable safety requirements. Required lighting shall be shielded so that light is directed downward and away from vegetation or playa areas.

BIO-5. Preconstruction Surveys for Nesting Birds. If tree or shrub removal activities are scheduled to occur during the bird breeding season (January 15 to July 31), pre-construction surveys for bird nests shall be conducted no more than 7 days prior to the start of ground-disturbing activities. Surveys shall be conducted in areas of suitable nesting habitat that will be impacted by construction. Active nests will be marked at a safe distance with visible flagging and the construction crew supervisor will be made aware of these locations. Construction may commence in all areas without active bird nests. All bird nests will remain undisturbed while they are active. After a nest ceases to be active (fledges or fails), and the qualified biologist has made this determination, construction may proceed in the area. If construction is initiated in one breeding season and persists into subsequent breeding seasons, additional surveys are not necessary unless construction activities involve additional tree or shrub removal.

4.3.8 Impact Significance After Incorporation of Mitigation Measures

With implementation of the above mitigation measures, project-related impacts on biological resources will be less than significant.

Section 4.4
Cultural Resources

4.4 CULTURAL RESOURCES

In prehistoric and historic times, Owens Lake and surrounding lands would have been appealing locations for human occupation because of the availability of water. As a result, prehistoric, historic and paleontological resources have been encountered in the project area. As presented in the Initial Study for the Phase 7a project (**Appendix A**), LADWP has determined the project would have the potential to significantly impact cultural resources. Therefore, consideration of historical, archaeological, and paleontological resources has been carried forward for detailed analysis in this EIR. As a result of the cultural resource analysis, LADWP has identified an environmentally superior alternative (Avoidance Alternative, Section 5) that excludes approximately 350 acres from the original 3.1 square mile Phase 7a area in order to reduce impacts to significant cultural resources.

Cultural resources pedestrian surveys of the Phase 7a project area, testing and evaluation of identified resources, and the interpretation of subsequent results were conducted by Garcia and Associates (GANDA). Assistance was also provided by staff from BonTerra Consulting and MWH, and tribal members from the Lone Pine Paiute-Shoshone Reservation were present during the archaeological survey and testing phases. Phase I pedestrian surveys were conducted between May 12, 2011 and August 10, 2011 over 2,217 acres of the Phase 7a project area (GANDA, 2011c). Phase II testing and evaluation of potentially significant resources were conducted between September 23, 2011 and January 13, 2012 (GANDA, 2012b). Surveys of the Option C water supply pipeline alignment and the Access Roadway were conducted between May 20 and May 25, 2012. [Note that Phase I survey of the Option A and Option B water supply pipeline alignments was conducted during the original 2011 survey period.]

Cultural resources are defined as buildings, sites, humanly modified landscapes, Traditional Cultural Properties (TCPs), structures, or objects that may have historical, architectural, cultural, or scientific importance. In accordance with CEQA, if a project will cause a substantial adverse change in the significance of a cultural resource, the lead agency shall identify measures to avoid or mitigate the changes. However, only significant cultural resources require consideration in mitigation plans. Paleontological resources include fossil remains and formations that have produced fossil finds. Paleontological specimens and localities are also nonrenewable resources protected under CEQA.

4.4.1 Confidentiality of Cultural Resources

As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Under CEQA, lead agencies generally disclose likely impacts; however, in the case of confidential issues, such as the contents and locations of culturally sensitive cultural resources, less disclosure is judicious. In accordance with CEQA section 15120(d), “No document prepared pursuant to this article that is available for public examination shall include a "trade secret" as defined in Section 6254.7 of the Government Code, information about the location of archaeological sites and sacred lands, or any other information that is subject to the disclosure restrictions of Section 6254 of the Government Code." In addition, among the objectives of Senate Bill 18 (SB18), known as the Tribal Consultation Guidelines, and passed by the California legislature in 2005, is "protecting the confidentiality of California Native American prehistoric, archaeological, cultural, spiritual, and ceremonial places" (State of California, 2005:25). Further, recent case law for *Clover Valley Foundation v. City of Rocklin* provides authority for agencies to withhold from public disclosure detailed information about the precise location and contents of potentially affected Native American cultural sites in order to safeguard those sites from destruction, vandalism, or looting (C061808 Cal Ct App, 2011).

Therefore, the locations of cultural resources identified previously, and during the 2011/2012 field work for the Phase 7a project, are confidential in order to protect the integrity of the resources.

This EIR contains a summary of the results of previous investigations and the Phase I and Phase II cultural resources evaluations conducted for the project. However, the reports associated with those investigations are confidential and are not appended to this document.

4.4.2 Phase 7a Project Areas

In accordance with CEQA, a lead agency must determine if there are historical resources within a project area that are listed in the CRHR, or properties not yet listed that may be eligible as historical resources or unique archaeological sites. CEQA requires a review of projects sponsored by public agencies to determine the effects of the project on historical resources, and both public and private projects with financing or approval from a public agency must assess the effects of the project on cultural resources (Public Resources Code Section 21082, 21083.2, and 21084.1 and California Code of Regulations 15064.5). The original Phase 7a project consists of approximately 3.1 square miles of dust control on six DCAs (including installation of an irrigation system in T12-1 to support on-going Tillage) and transition of approximately 3.4 square miles of existing Shallow Flooding to a hybrid of control measures (Shallow Flooding, Managed Vegetation and Gravel Cover). Construction for Phase 7a will include land leveling and re-contouring, trenching for pipeline installation, earthwork for berm creation, and heavy equipment traffic for installation of geotextile fabric, gravel, irrigation systems, and plant materials. The Phase 7a project includes:

- The five DCAs proposed for BACM installation (T1A-3, T1A-4, T32-1, T37-1, and T37-2)
- Installation of an irrigation system in T12-1 to support on-going Tillage
- The five DCAs proposed for conversion to Hybrid BACM (T1A2_a,T28N, T28S, T30-1, and T36-1_b)
- The two DCAs proposed for conversion to Gravel Cover (T35-1 and T35-2)
- The areas immediately adjacent to the DCAs where berms may be installed or reconfigured [survey width of 200 feet surrounding the new DCAs, buffer area of 200 feet from select areas of existing DCAs]

- Three water pipeline options were reviewed. Option A extends from T37-1 to T37-2, with a survey area of approximately 12,630 feet long by 200 feet wide. The area of potential construction disturbance for installation of water supply pipeline Option B, extending from T36-2 through a portion of the Phase 8 project site, and connecting to T37-2 comprises a survey area of approximately 13,621 feet long by 200 feet wide corridor], A third alternative, Option C, extends southeast from T37-1, then merges with the southern portion of the Option B corridor route to T37-2. The Option C pipeline survey area measures 15,121 feet long by 200 feet wide. [The potential for cultural resources to be present in the portion of the pipeline alignment that traverses the Phase 8 project area was previously considered (GANDA, 2011a, 2011b).]
- The area of potential construction disturbance for improvement of an existing access roadway from Hwy 395

4.4.3 Previous Cultural Resources Assessments

Thirty-two previous studies have been performed on the Owens Lake in the Phase 7a project area. Therefore, the original approach for cultural resources assessment was to rely primarily on the results of previous studies, supplemented with new pedestrian surveys in areas that had not been previously surveyed (i.e., the alignment of the T37-2 water supply pipeline and the access roadway). The three most relevant previous studies are:

- In 2003, Ancient Enterprises reported 45 archaeological sites and isolates during a pedestrian survey of specific block areas at Owens Lake in support of the Owens Valley PM_{10} State Implementation Plan (Ancient Enterprises, 2003).
- In 2007, Sapphos Environmental, Inc. performed supplemental surveys of 6,533 acres within the lake bed, resulting in the discovery of 5 new prehistoric sites and 57 prehistoric isolates, for the Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (GBUAPCD, 2008b).
- A third related study, by ICF Jones and Stokes in 2008, consisted of archaeological testing and evaluation of 15 prehistoric archaeological sites and 14 historic period archaeological sites; however, none were determined to qualify as CRHR-eligible resources (ICF Jones and Stokes, 2008a).

Other relevant studies include BLM and Far Western Anthropological Research Group, 2005 (Halford and Carpenter, 2005); BLM, 2008 (Haverstock 2008); Burton, 2005; Eerkens, 1997; Gallegos et al., 2000a, 2000b; GANDA, 2002a, 2000b, 2010a, 2010b, 2011a, 2011b, 2011c; ICF Jones & Stokes, 2008b; Jones and Stokes, 1997, 2002a, 2002b, 2004a, 2004b, 2005a, 2005b, 2006, 2007a, 2007b, 2007c, 2008a; Parr et al., 2001; Riddell and Riddell, 1956; and Trans-Sierran Archaeological Research, 2005. In total, 153 prior recorded historic and prehistoric archaeological sites are present in the Phase 7a area; of these, two were previously evaluated as CRHR-eligible resources. Nineteen sites were previously determined not to be eligible for inclusion in the CRHR, and two sites were unevaluated.

The cultural resources evaluation for Phase 7a is based on the results of the previous surveys in the project areas, and the results of 2011/2012 surveys conducted in T1A-3, T1A-4, T32-1, T37-1, T37-2, the accessible portions of T12-1, areas where berms may be reconfigured in the

Transition Areas, three water supply pipeline alignments and the access roadway alignment. [Note that T2-1, T5, and T26 were originally considered as Transition Areas, but are no longer included in the project. Information from berm surveys in these DCAs is included in the Phase II Archaeological Investigation Report for the project.] Transition Areas, comprising T1A-2_a, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b, were not resurveyed in 2011/2012 because of previous ground disturbances within these existing Shallow Flooding areas.

4.4.4 Regulatory Framework

The federal government first addressed the protection of cultural resources in the Antiquities Act of 1906 (Title 16, United States Code, §431-433). Other federal laws pertaining to the protection of cultural and ethnographic resources include Section 106 (36 C.F.R. Part 800) of the National Historic Preservation Act (NHPA), Executive Order 11593, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act of 1990 (**Table 4.4-1**). Archaeological studies performed on federal lands are required to conform to standards set out in Section 106 of the NHPA.

The U.S. Secretary of the Interior has published a set of Standards and Guidelines for Archaeology and Historic Preservation, which describe suitable professional methods and techniques used to recover and preserve archaeological and historic properties. The State Historic Preservation Office (SHPO) refers to these standards in its requirements for the mitigation of impacts to cultural resources on public lands in California.

Table 4.4-1
Federal Ordinances, Regulations & Standards for Cultural Resources

Legislation	Definition
Section 106 (36 C.F.R. Part 800) of the National Historic Preservation Act (16 U.S.C. § 470)	Requires federal agencies to take into account the effects of their undertakings on historic properties through consultation with federal agencies and the SHPO beginning at the early stages of project planning. Regulations revised in 1997 (36 C.F.R. Part 800 et. seq.) set forth procedures to be followed for determining eligibility of properties for the National Register of Historic Places (NRHP). The eligibility criteria and process are used by federal, state, and local agencies in the evaluation of the significance of cultural resources. Very similar criteria and procedures are used by California to identify cultural resources eligible for listing in the CRHR. Recent revisions to Section 106 in 1999 emphasized the importance of Native American consultation.
Executive order 11593, “Protection of the Cultural Environment,” May 13, 1971, (36 C.F.R. Part 8921)	Orders the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.
American Indian Religious Freedom Act, Title 42, U.S.C. § 1996	Protects Native American religious practices, ethnic heritage sites, and land uses.
Native American Graves Protection and Repatriation Act (1990), Title 25, U.S.C. §	Defines “cultural items,” “sacred objects,” and “objects of cultural patrimony”; establishes an ownership

Legislation	Definition
3001, *et seq.*	hierarchy; provides for review by the Reviewing Committee; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for return of specified cultural items.
American Antiquities Act of 1906, 16 USC 431-433	Enacted by the Senate and House of Representatives of the United States of America in Congress. Declares that any person who excavates or destroys any historic or prehistoric site, ruin or monument on lands owned or controlled by the government without permission is subject to fines and imprisonment.

4.4.4.1 State

Phase 7a of the OLDMP is subject to compliance regulations stipulated by CEQA, as summarized in **Table 4.4-2**. In accordance with CEQA Public Resources Code Section 21083.2 and CEQA Guidelines Section 15064.5(a), all cultural resources within the Phase 7a project area that may be adversely affected by the project must be evaluated to determine their significance. The lead agency shall then identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource.

Table 4.4-2
State Laws, Ordinances, Regulations & Standards for Cultural Resources

Legislation	Definition
Public Resources Code, Section 5020.1	Defines several terms, including the following: (j) "Historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. (k) "Substantial adverse change" means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.
Public Resources Code, Section 5024.1	Establishes a CRHR; sets forth criteria to determine significance; defines eligible properties; and lists nomination procedures.
Public Resources Code, Section 5097.5a	"No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature, situated on public

Legislation	Definition
	lands, except with the express permission of the public agency have jurisdiction over the lands. Violation of this section is a misdemeanor."
Public Resources Code, Section 5097.98	Defines procedures for notification of discovery of Native American artifacts or remains and for the disposition of such materials. This section also prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties for these actions.
The California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.; Title 14, California Code of Regulations, Section 15000 et seq.)	Requires analysis of potential environmental impacts of proposed projects and requires application of feasible mitigation measures.
Public Resources Code Section 21082	States that "*All public agencies shall adopt by ordinance, resolution, rule, or regulation, objectives, criteria, and procedures for the evaluation of projects and the preparation of environmental impact reports and negative declarations pursuant to this division."*
Public Resources Code Section 21083.2	States that the lead agency determines whether a project may have a significant effect on "unique" archaeological resources; if so, an EIR shall address these resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, mitigation measures shall be required as prescribed in this section. The section discusses excavation as mitigation; limits the applicant's cost of mitigation; sets time frames for excavation; defines "unique and non-unique archaeological resources"; and provides for mitigation of unexpected resources.
Public Resources Code Section 21084.1	Indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historic resource; the section further defines a "historic resource" and describes what constitutes a "significant" historic resource.
CEQA Guidelines, Title 14, California Code of Regulations, Section 15126.4(b)	Prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project's impact on a historical resource; discusses documentation as a mitigation measure; and discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.
CEQA Guidelines, Section 15064.5	Defines the term "historical resources," explains when a project may have a significant effect on historic resources, describes CEQA's applicability to archaeological sites, and specifies the relationship between "historical resources" and "unique

Legislation	Definition
	archaeological resources.”
Penal Code, Section 622 1/2	States that anyone who willfully damages an object or thing of archaeological or historic interest is guilty of a misdemeanor.
CEQA Guidelines, Appendix G, Section V	Lists questions that are relevant to evaluating a project’s impacts on archaeological, historic, and paleontological resources.
California Health and Safety Code, Section 7050.5	States that if human remains are discovered during construction, the project owner is required to contact the county coroner.
Senate Bill 18 (Chapter 905, Statutes of 2004) – Tribal Consultation Guidelines	Cities and counties are required to consult with Native American tribes when adopting and amending their general plans or specific plans. The guidelines also describe methods to protect the confidentiality of information regarding cultural places.

CEQA defines significant historical resources as resources listed or eligible for listing in the CRHR (Public Resources Code Section 5024.1). A property may be considered “historically significant” if it meets the following criteria for listing on the CRHR:

1. It is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage; or

2. It is associated with the lives of persons important to California’s past; or

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. It has yielded or is likely to yield information important in prehistory or history.

4.4.4.2 CEQA Regulations Regarding Human Remains

Section 15064.5 of the CEQA Guidelines specifies procedures to be used in the event of an unexpected discovery of Native American human remains on state lands. The procedures are outlined in Public Resources Code Sections 5097 and 5097.98. The codes protect such remains from disturbance, vandalism, and inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during project construction; and establishes the Native American Heritage Commission (NAHC) as the authority to resolve disputes regarding disposition of such remains.

4.4.4.3 Local

According to the Inyo County General Plan’s Land Use/Conservation/Open Space Element (Inyo County, 2001), the County’s cultural resources goal (CUL-1) is to “Preserve and promote the historic and prehistoric cultural heritage of the County.” The following Inyo County General Plan policies relate to cultural resources:

<u>Partnerships in Cultural Programs - Policy CUL-1.1</u>: Encourage and promote private programs and public/private partnership that express the cultural heritage of the area.

<u>Interpretive Opportunities - Policy CUL-1.2</u>: Support and promote the development of interpretive facilities, such as roadside kiosks, museums, and restored historic buildings that highlight the County's cultural resources.

<u>Protection of Cultural Resources - Policy CUL-1.3</u>: Preserve and protect key resources that have contributed to the social, political, and economic history and prehistory of the area, unless overriding considerations are warranted.

<u>Regulatory Compliance - Policy CUL-1.4</u>: Development and/or demolition shall be reviewed in accordance with the requirements of CEQA and the NHPA.

<u>Native American Consultation - Policy CUL-1.5</u>: The County and private organizations shall work with appropriate Native American groups when potential Native American resources could be affected by development proposals.

Further, Ordinance Title 9, Section 9.52.030 (Project or action – Commission approval, Requirements) of the Inyo County Code asserts the following (Inyo County, 1973):

> No publicly or privately sponsored project or action shall be expressly permitted by the county planning commission, hereinafter, "the commission," or any other county agency where the commission finds that any archaeological, paleontological, and historical features, or Native California Indian burial sites may be disturbed in any way by the project or action; provided, the commission may conditionally expressly permit the project or action if the project or action sponsor takes responsibility for preservation, protection, or relocation of the features or sites in accordance with a specific plan for preservation, protection, or relocation that shall be reviewed and approved by the commission after a public hearing. The public hearing shall be held, in the instance of Native California Indian burial sites, following the review and comment required by Section 9.52.020.

4.4.5 Environmental Context

Prior to the 1980s, limited archaeological research was conducted in Owens Valley and the greater southwestern region of the Great Basin. Aside from general information obtained from better known sites (e.g., Cottonwood Creek and the Stahl and Rose Spring sites) and from archaeological survey work conducted at the northern end of Owens Valley (Bettinger, 1975, 1977), investigations focused on small surveys in specific locations. The resulting technical reports focused primarily on surface survey information and not on regional questions related to prehistory.

In the 1970s and 1980s, researchers conducted a small number of more formal excavations in Owens Valley, but technical reports generated from these excavations lacked detail and interpretive data (Peak, 1975; Wilke, 1983). However, archaeological research in the 1990s has helped refine the cultural chronological sequence for the Owens Valley and the southwestern region of the Great Basin in general (Basgall, 1990; Basgall and Giambastiani, 1995; Delacorte et al., 1995; Gilreath and Hildebrandt, 1997). Importantly, spatio-temporal data and diagnostic artifacts recovered from CA-INY-30 in southern Owens Valley have helped to clarify our understanding of prehistoric cultural development and change in this region of the Great Basin (Basgall and McGuire, 1988).

4.4.5.1 Paleo-Indian Complex (10,000 - 8000 cal B.C.)

Prior to 10,000 years ago, inhabitants of this region were predominantly foragers who subsisted on an assortment of plant and animal food sources (Moratto, 1984). They may have hunted large game, such as mammoths and sloths, as suggested by the presence of larger spear points in archaeological sites (Earle et al., 1995). Pleistocene aged sites from the Paleo-Indian Complex are common around lakeshores, grasslands, and mountain passes. By 10,000 years ago, some of the interior populace migrated to the coast and began to exploit new resources (Moratto, 1984). Other interior groups relied heavily on retreating lakeshores for survival. Both areas experienced a trend with respect to increased subsistence from both smaller game animals and plant foods as larger game became extinct (Earle et al., 1995). Importantly, fluted projectile points, indicative of this period, have been reported in the Rose Valley area, south of Owens Lake (Borden, 1971; Yohe, 1992).

4.4.5.2 Lake Mojave Period (9000-6000 B.P.) and Little Lake Period (6000-3150 B.P.)

Because evidence from the Lake Mojave and Little Lake periods in the Southern Owens Valley is scarce, and the change in technology is minor, they are discussed together. The Lake Mojave Period generally dates before 6000 B.P. (Bettinger and Taylor 1974); however, several sources provide a more refined dating of 9500 B.P. - 7000 B.P. (Basgall and McGuire 1988; Gilreath 1995). Large-stemmed, basally thinned, concave-base projectile points and a variety of other bifacial and unifacial tool forms mark this period. Projectile points of the Little Lake/Pinto/Gatecliff series characterize the Little Lake Period (6000–3150 B.P.) (Bettinger and Taylor, 1974).

Basgall and McGuire’s (1988) work at CA-INY-30, finds evidence that early aboriginal peoples were highly mobile and only sporadically occupied village sites such as CA-INY-30. Artifacts recovered indicate a culture that was oriented toward the exploitation of animal resources. Artifacts from this period are primarily general-use items, reflecting the need of a relatively mobile society to employ implements that have multiple uses. Consequently, sites show a considerable degree of uniformity, regardless of their size or position within the overall settlement system (Delacorte et al., 1995).

The lithic assemblage associated with the mid-Holocene epoch includes a high percentage of cores and chopping tools, small bifaces, and large-stemmed point forms. Projectile point forms produced by percussion flaking on relatively large, thick preforms—suggest an emphasis on durable tools rather than more gracile forms. Milling equipment, which is not abundant, usually consists of unshaped specimens that exhibit light wear from use. These include thin slab metates and hand stones typically made of locally available materials. These items appear to have been used for immediate needs and then discarded. The paucity of milling equipment suggests a relatively low emphasis on seed resources.

4.4.5.3 Newberry Period (3150 B.P. to 1350 B.P.)

Elko and Humboldt basal-notched series projectile-point forms characterize the Newberry Period (Heizer and Hester, 1978; O'Connell, 1967; Thomas, 1983). Available data reveal seasonally occupied habitation sites, suggesting that groups from this period were more mobile than those from later prehistoric periods (Basgall and McGuire, 1988). Basgall and McGuire noted that at approximately 2200 B.P., a period of climatic instability (warmer and drier conditions) began that may have caused a shift in the adaptive stance of the region's hunter/gatherers. However, more recent regional climatic data suggest that the warmer and dryer conditions occurred at 1900 B.P., with warm and moist conditions occurring from 1400 to 1000 B.P. (Halford, 1998:51).

Nonetheless, it appears that the disruption, around 1900 B.P., of the somewhat stable environmental conditions may have affected the seasonal availability, abundance, and distribution of resources. Although it is not known whether the overall carrying capacity was absolutely reduced, as some have argued (Grayson, 1993), it is apparent that the formerly relatively static population began to fluctuate or became more mobile as new adaptive conditions were presented. In addition, recovered faunal remains from this period indicate that a narrower range of animal resources was exploited (Delacorte et al., 1995). Storage facilities and other permanent structures may have become important at this time to offset deficiencies in the availability of critical resources.

4.4.5.4 Haiwee Period (1350 B.P. to 650 B.P.)

Rose Spring and Eastgate series projectile point types characterize the Haiwee. General settlement characteristics of this period indicate reduced hunter-gatherer mobility and a pattern of more centralized or restricted land-use areas. Tool inventories suggest the use of both plant and animal resources (Basgall and McGuire, 1988). The focus appears to be on high cost subsistence items or strategies and the intensification of specific resources. Early substantial evidence of resource intensification is indicated by the use and exploitation of resources of characteristically marginal habitats such as the high altitude White Mountains, the labor-intensive collection and processing of piñon (*Pinus monophylla*) cones, and the heavy economic focus on lacustrine avifauna from Owens Lake.

The pattern of increasing settlement centralization and subsistence intensification emerged sometime between 1500 and 1300 B.P. at the beginning of the Haiwee period (Delacorte et al., 1995; Delacorte, 1999; Gilreath, 1995; Zeanah et al., 2000). Recovered archaeofaunal remains from previous investigations at CA-INY-30 and CA-INY-3806/H indicate a dramatic increase in the use of avifauna at approximately 1300 B.P.; this increase correlates with the increased number of Haiwee and Marana period Owens Lake shore sites (Gilreath, 1995; Basgall and McGuire, 1988; Delacorte and McGuire, 1993). Regional archaeological data indicate occupation of sites was for longer durations and used more intensively during this time (Delacorte et al. 1995; Delacorte, 1999). A recent study of 184 prehistoric sites in the pinyon-juniper zone of the Naval Air Weapons Station, China Lake supports the theory that an increase in the exploitation of green piñon nuts versus brown-cone harvesting after 1350 B.P. is the result of population pressure (Hildebrandt and Ruby, 2006). Groundstone types carried over from earlier forms, but they also included a very thin, portable slab milling stone that was notched so it could be suspended from a cord for carrying (Delacorte et al., 1995). The smaller and lighter attributes of these groundstone implements support a pattern of increased mobility. Bedrock mortars also came into use, often in the same locations as the milling stones. A movement from the biface orientation to the use of nonspecialized and more expedient flake tools becomes apparent; the latter were usually made casually and were used only briefly before being discarded.

Although a warm and moist period is indicated for the earliest part of the Haiwee Period (1400–1000 B.P.), a cooling and drying trend began around 1000 B.P. This climatic change appears to have been of short duration, lasting approximately 100 years before an apparent shift to warm and dry conditions from approximately 900 to 600 B.P. (Halford, 1998:51). Stine (1994, 1998) postulated that Owens Lake was dry between 900 and 600 B.P. and argues for a model in which people moved from moderately low lakeside sites to the playa floor to exploit resources associated with playa springs.

The appearance of Rose Spring and Eastgate series projectile points signaled the introduction of the bow and arrow, which replaced the atlatl as the principal hunting implement (Bettinger and Eerkens, 1999). Along with these changes, pressure flaking became a more prominent method for finishing/sharpening flaked stone implements in comparison to earlier time periods when pressure flaking was either not used or was less commonly employed to finish/sharpen stone tools. By 1500 B.P., the archaeological record begins to show a higher degree of resource intensification, settlement nucleation, and elaborate sociopolitical integration as well as the emergence of social differentiation. Evidence from this period indicates population growth and increased exploitation of high-cost resources from relatively sedentary villages. This change in the archaeological record may reflect population replacement of a pre- Numic speaking culture (highly mobile and reliant on widely dispersed resources) by the contact-period Numic-speaking culture, which was less mobile and exploited diversified local resources. This population replacement is estimated to have occurred within the last 700 years (Bettinger and Baumhoff, 1982; Lamb, 1958).

4.4.5.5 Marana Period (650 B.P. to Contact)

Desert Side-Notched and Cottonwood projectile points, as well as Owens Valley Brown ware ceramics, mark the Marana period. This era is marked by an increase in population, coinciding with an intensified exploitation of vegetal resources, and further restrictions in mobility (Delacorte et al., 1995). Obsidian source analysis supports this conclusion. Unlike the Newberry Period profiles, obsidian sources are not represented in differential frequencies across artifact classes. Although a relatively broad range of obsidian sources was exploited, they occur in similar proportions across artifact classes and stages in the reduction trajectory. This change likely represents exchange through trade within a relatively sedentary settlement pattern (Basgall and Giambastiani, 1995).

Subsistence efforts were further concentrated on riverine and lacustrine environments, and low-ranked resources, such as freshwater mussels (*Anodonta* sp.). Other resources of low rank, such as small seeds (*Orzopsysis hymenoides*), were added to the diet. Piñon nuts (*Pinus monophylla*) were harvested while still green. A significant amount of activity took place away from the main settlements at special procurement sites such as piñon camps, reflecting an extensively logistical organization. Irrigation of tracts of wild flora in Owens Valley began late in the period, and trade and food storage became important characteristics by which seasonal and areal shortages were regulated (Bettinger and King, 1971). Pottery also marks the Marana Period, with relatively crude and utilitarian Brownware pots entering the archaeological record. Recent studies suggest that pottery only emerged as a result of population densities making ceramic industries sufficiently economical, further suggesting an increase in population in the Marana Period (Eerkins, 2001).

Various dating methods, applied to a human-made rock cairn site at the east side of Owens Lake, revealed occupation as early as the 14th or 15th centuries, with human remains dating to 530 B.P. (Halford and Carpenter, 2005).

4.4.6 Ethnographic Context

The project area is near the historic boundary of two Native American groups: the Owens Valley Paiute and the Koso Shoshoni (Thomas et al., 1986; Yohe, 2001). Both groups speak languages that belong to the Numic branch of the Uto-Aztecan language family (Miller, 1986).

4.4.6.1 Owens Valley Paiute

Owens Valley and its surrounding uplands were occupied during the contact period by the Owens Valley Paiute, who spoke dialects of the Mono language, a division of the Western Numic branch of the Uto-Aztecan language family (Bettinger and Baumhoff, 1982; Liljeblad and Fowler, 1986). General territorial boundaries were the Sierra Nevada to the west, the Inyo-White Mountains to the east, and the southern shore of Owens Lake to the south, and the Benton Range and Long Valley to the north (Delacorte et al., 1995). Estimates of the aboriginal population vary between 1,000 and 2,000 individuals, making Owens Valley the most densely populated area in the Great Basin. At times, the population of Owens Valley numbered more than two people per square mile. This densely settled valley might have been a source of social and technological innovation for surrounding areas of the western Great Basin, while being influenced itself by cultures of the North American Southwest and other regions of California.

Inhabitants of the Owens Valley occupied semi-permanent base camps named for topographic features. The same families occupied these small transitory and unstructured communities temporarily from year to year. The basic sociopolitical unit typically consisted of a large main village and several surrounding allied settlements. Each of these villages was a territorial unit with a substantial population presided over by a designated headman (Liljeblad and Fowler, 1986). This pattern was unlike other Great Basin sociopolitical systems in which the household or nuclear family was the primary productive unit and the band the highest level of social integration. The most obvious parallel is with the tribelet organization that typified populous regions of areas in California to the west (Kroeber, 1932). Julian Steward (1933:325-326) recorded 19 villages in the immediate vicinity of Owens Lake.

Steward (1933) noted at least seven such units in Owens Valley, which he described as composite land-owning bands. These bands displayed the highest level of organization among any of the Western Numic speakers--the groups sharing broadly similar subsistence techniques and languages. The relatively high level of organization can be discerned in several important traits. First, these bands held communal ownership of seed and piñon nut patches, and the hereditary chief coordinated irrigation of communal seed patches. These irrigation systems were present throughout the valley, but were more prevalent in the northern portion of the valley, near present-day Bishop (Lawton et al., 1976). While individual hunting occurred, the band would also engage in communal rabbit, deer, and pronghorn antelope drives.

Finally, individual villages shared a single sweathouse that also functioned as a male dormitory (Steward, 1938). The singular nature of this organizational structure is obvious when nearby groups are considered. The neighboring Shoshone had no communal ownership of piñon nut or seed patches except in Saline Valley, where territorial ownership had likely been adopted from, or in response to encroachment by, other groups or the neighboring Owens Valley Paiute (Steward, 1938). Rather than lineages with the nuclear family as the dominant unit of production and reproduction, broad kindred relationships seem to have been the basic kinship pattern among the Owens Valley Paiute. Kinship groups were not in and of themselves territorial; however, most settlements excluded all blood kin to the level of third cousin from marrying (Liljeblad and Fowler, 1986).

Owens Valley Paiute ceremonies were predominantly outdoor social events (Liljeblad and Fowler, 1986), in contrast to the California pattern, in which most ceremonies were held in large structures. Perhaps the most important ceremony was the annual fall mourning ceremony held in honor of those who had died during the previous year. During this time, a widow or widower was released from a yearlong mourning period and allowed to reenter social relationships, including marriage.

Several types of habitation structures were ethnographically documented in the region, with three main subtypes occurring within the Owens Valley. These include a large, round, semi-subterranean, earth-covered assembly house; a smaller domestic version; and a simple brush dwelling built at ground level with a superstructure of bent willow poles for summer use. In addition, wooden lean-tos were used at higher elevations, and ramadas and brush enclosures were used during summer months on the valley floor.

The narrowness of the Owens Valley contributed to the overlap of several proximal but distinct environmental zones. Important food resources for the Owens Valley Paiute included migratory and resident waterfowl, artiodactyls, lagomorphs (*Lepus californicus* and *Sylvilagus floridanus*), fish (*Catostomus arenarius* and *Siphateles obesus*), and freshwater mussels (*Anodonta californiensis*). Important invertebrates included brine shrimp (*Artemia* sp.) and brine fly (*Ephydra* sp.) larva and pupae from the saline waters of Mono and Owens lakes, grasshoppers (*Melanoplus* sp.), and Pandora moth caterpillars (*Coloradia pandora*) collected from the yellow-pine belt of the Sierra Nevada. Important vegetable resources included chia (*Salvia columbariae*), rice grass, and numerous grass seeds and tubers from the valley; piñon nuts from the Inyo-White Mountains; and acorns from the eastern slopes of the Sierra Nevada.

Piñon nuts and acorns were highly valued because they were easily stored. Individual family or kin groups harvested piñon nuts or, when the crop was especially good, multifamily groups harvested the nuts. The preferred type of acorn was that of the black oak (*Quercus kellogii*), which is abundant on the western slope of the Sierra Nevada. The acorns were obtained either directly or through trade. In addition, taboose (nutgrass, *Cyprus* sp.) and other types of productive wild plants were irrigated by a system of check dams and feeder ditches that enlarged the plants' natural habitat (Liljeblad and Fowler, 1986). Larger game included mule deer and bighorn sheep. Individuals and small groups hunted both deer and bighorn sheep. Communal antelope (*Antilocarpa americana*) drives were necessary to drive the animals into corrals through long systems of drift fences (Steward, 1938).

In addition to their own rich homeland, the people dwelling in Owens Valley had access through trade to products of the Sierra Nevada and the Great Basin biotic zones as well as those of the Mojave Desert to the immediate south. Trade and marriage ties closely linked the Owens Valley Paiute with surrounding groups such as the Yokuts, Miwok, Tubatulabal, and Mono to the west, and other outlying Paiute-Shoshonean groups to the east (Steward, 1938; Thomas et al., 1986). These interactions allowed the accumulation of considerable wealth, contributing to further cultural elaboration. The Owens Valley groups exhibited a highly sedentary orientation to the environment. This orientation distinguished them from all other Great Basin ethnic groups, who followed a predominately mobile pattern (Binford, 1980).

4.4.6.2 Koso Shoshoni

A group of Numic-speaking Native Americans, referred to by anthropologists as the Koso Shoshoni, Panamint Shoshone (incorrectly), and Little Lake Shoshone, inhabited the southern portion of Owens Valley (Kroeber, 1932; Steward, 1938). The Koso Shoshoni speak a local dialect of the Panamint language (hence Kroeber's classification of Koso Shoshoni as Panamint Shoshoni), which consists of Panamint and Koso Shoshoni dialects (Miller, 1986; Steward, 1937).

The Shoshoni of Inyo County occupied territorial units that Steward referred to as districts (Steward, 1937, 1938). One or more men in each district were headmen or political leaders (*poganabi*), who announced the timing of annual gatherings and communal drives; directed piñon nut harvests, hand games, and dances; and served as the chief negotiator for inter-district affairs. Although the district *poganabi* supervised these activities, the headmen typically delegated specific tasks to other individuals, who were considered *poganabi* for those tasks (Irwin, 1980). Delegation of leadership probably accounts for Steward's statement that rabbit drives were either directed by a headman or the net owners (Steward, 1938). Local *poganabi* also represented their family or village in internal politics (Irwin, 1980).

Koso villages typically consisted of one or more related families that traveled near one another during the seasonal round; although, villages also consisted of unrelated families because the Koso frequently changed residence. Parents arranged marriages between unrelated individuals. The groom's parents affected the marriage by paying a bride price in shell money to the bride's parents. In return, the bride's parents gave food and buckskins to the groom's parents. Village endogamy was permitted if individuals were unrelated, though village exogamy was the norm. District exogamy was also common among the Koso Shoshoni. Post-marital residence rules were flexible, though preferably matrilocal until the birth of a couple's first child. The Koso Shoshoni also married with other groups during the historic period—Kawaiisu, Tübatulabal, Owens Valley Paiute, and Euroamericans (Irwin, 1980; Steward, 1938).

Although the Koso Shoshoni "lacked…intervillage cohesion" (Steward, 1938), they possessed several means of social integration. Three of these, piñon nut harvests, rabbit drives, and antelope drives, are described below. The other two means of integration were annual fall gatherings and the mourning ceremony (Irwin, 1980; cf. Steward, 1938). Fall gatherings, termed *fandangos* by some researchers (Thomas, 1983), were the setting for dances, games, and socializing. The Koso Shoshoni held fall festivals at different villages in a given district over the years, and families from other districts often participated in the festivities. The host village distributed food, beads, and coins (in the historic period) to visitors from other villages and districts. Because the location of festivals changed from year to year, fall festivals constituted a kind of exchange system among the Koso Shoshoni. The festivals doubtless permitted information exchange about resource availability and quality (Irwin, 1980; Steward, 1938; Thomas, 1983; Thomas et al., 1986).

Steward stated that the Koso Shoshoni "had no large mourning ceremony to unite different villages" (Steward, 1938). He notes, however, that George Gregory (Shoshoni) remembered the Koso Shoshoni as holding mourning ceremonies every few years. Family members kept valuables belonging to deceased individuals until the mourning ceremony, at which time the belongings were burned to honor the dead (Steward, 1938). Irwin indicates that other valuables were distributed to visiting participants and asserts that these ceremonies functioned as exchange systems because they were held at different locations (Irwin, 1980). Alternatively, Steward states that only close neighbors participated in mourning ceremonies (Steward, 1938).

The Koso Shoshoni practiced a seasonal round. The family is the key subsistence and economic unit among the Koso Shoshoni; families and clusters of related families foraged together from spring to fall. Plants comprised the bulk of the Koso Shoshoni diet, although small game were killed and eaten throughout the year on an encounter basis (Irwin, 1980; Steward, 1938; Thomas, 1983; Thomas et al., 1986). In spring, single families or family clusters gathered ripening greens and bulbs such as varieties of prince's plume (*Stanleya pinnata* and *S. elata*), desert thistle (*Cirsium* spp.), fiddlenecks (*Amsinckia* spp.), blue dicks (*Dichelostemma capitatum*), sego lily (*Calochortus nuttallii*), and broom rape (*Orobanche ludoviciana*). Seeds of various plants were gathered at this time as well, though seed harvesting intensified from June to September. During these months, Koso Shoshoni families moved into the Coso Mountains to gather seeds. If seed yields were especially productive, the Koso Shoshoni often cached seeds in the gathering area for winter use. Families usually remained within one day's march of their winter villages so that trips to seed caches were not inconvenient (Irwin, 1980; Steward, 1938). A number of small game animals and birds were exploited at this time, including badger, chuckwalla, gopher, mice, rats, doves, eagles, hawks, crows, and snakes. The Koso Shoshoni also hunted bear, mountain lion, and wild cats (Steward, 1938).

By August or September, those families that were not already living in the Coso Mountains traveled there to harvest piñon nuts. The headman often designated specific areas for piñon nut harvests by multiple-family groups. When piñon nut crops were poor, individual families would travel to the Panamint Mountains and gather piñon nuts there instead (Irwin, 1980; Steward, 1938). The Koso Shoshoni in the vicinity of Olancha likely gathered acorns at the eastern foot of the Sierra Nevada as well. Occasionally, families hunted ducks at Owens Lake in the fall (Steward, 1938). The Koso Shoshoni wintered in lowland villages; although, if piñon nut yields were exceptional, the Koso Shoshoni might winter near the piñon nut caches.

The Koso Shoshoni also carried out two other subsistence activities during the fall: major rabbit drives and pronghorn antelope drives. Large rabbit drives were cooperative efforts on the part of several neighboring families. Major drives, such as those at Olancha, drew people from as far as Keeler (40 km/25 miles away) and Saline Valley (80 km/50 miles away). Eight to ten men beat the brush, flushing rabbits toward one or two nets. Nets were about 100 feet or greater in length, two feet tall, and were propped at intervals by sticks. When the rabbits ran into the nets, the net owners clubbed the rabbits to death (Steward, 1938:82–83). The Koso Shoshoni sometimes used fire to drive rabbits as well. The Koso Shoshoni conducted major rabbit drives in fall and occasionally winter because the animals' fur was thickest during these seasons; rabbit skins were valued for making blankets. Charles Irwin relates a report by George Gregory that the Shoshoni employed another method of rabbit hunting. Men smoked out an area by setting fire to brush. Rabbits would eventually tire from heat exhaustion and smoke inhalation, at which time they lay under brush. The hunters then dispatched the animals with bow and arrow (Irwin, 1980).

Fall antelope drives were undertaken at several locations in Koso Shoshoni territory, including Indian Wells Valley, the northern end of Saline Valley, and the area between the Coso Mountains and Owens Lake. A designated antelope-drive director announced the timing and place of a major drive several days before the event. Eight to ten men drove the antelope into a brush corral where the antelope milled around in confusion. Archers stationed at intervals along the length of the corral dispatched the animals (Steward, 1938).

The Koso Shoshoni also hunted pronghorn antelope individually, in addition to mule deer and bighorn sheep. Mule deer were also hunted by smoking out a limited area, as with rabbits. Bighorn sheep were more profitably hunted by a small group of men driving sheep into bottlenecks, where other hunters lay in wait (Irwin, 1980).

4.4.7 Historic Overview

4.4.7.1 Early Explorers and Early Settlement (A.D. 1820s - 1866)

French and American explorers traveled near the project areas as early as 1820. These early explorations made inroads into the region that would later be followed by settlers and gold seekers alike, as well as introducing new diseases to the native populations. A devastating cholera epidemic was introduced that reduced the native population by 75 percent in the 1830s. When the Mexican and American immigrants arrived in the coming decades, the native population was already significantly weakened (Cook, 1955).

Jedediah Strong Smith, an American trapper, is possibly the first non-Indian to travel through the Owens Valley area in 1829. Another expedition came through in 1831 under the leadership of Peter Skene Ogden, a trapper for the Hudson Bay Company. The Joseph Reddeford Walker expedition passed through the area in 1834, blazing a trail as they went. Walker also entered Owens Valley again in 1843 from the north, following his old trail with the Chiles emigrant party who were the second wagon train to enter California from the east. In 1845, Walker accompanied the main part of John C. Fremont's second expedition to California. Fremont and a small portion of the party actually entered California via Donner Pass, but the parties met in the San Joaquin Valley. The other party included Richard Owens, who Fremont valued so highly he named the river, lake, and valley in his honor. It is ironic that the person for whom the valley is named never saw it (Hoover et al., 1970).

The Hudson's Bay Company and other parties of American trappers continued hunting throughout the region until the early 1840s when the trapping industry rapidly decreased. By 1842, the Hudson's Bay Company terminated its California operations due, in part, to less yields and low profits (Thompson, 1957).

After California became the thirty-first state in September of 1850, A. W. von Schmidt surveyed the eastern Sierra Nevada Mountains and Owens Valley for the State of California in 1855 and 1856; his observations of the area were not favorable (Wilke and Lawton 1976:26; Babb 1992:264). Captain John W. Davidson headed a later expedition into the Owens Valley in 1859 to recover livestock that had migrated from Fort Tejon and to make contact with Native American tribes. Davidson's glowing report of the valley's resources brought public attention to the area (Wilke and Lawton, 1976:26). At the behest of the federal government, E. F. Beale of the Surveyor General's Office surveyed Owens Valley in 1861. In 1864, William H. Brewer observed large grassy meadows suitable for grazing cattle in the area (Farquhar, 1966 *in* Babb, 1992:263). Cattle grazing and agriculture opportunities began attracting settlers following these accounts of the area. The increase in the local population resulted in the California State Legislature's organization of Inyo County from sections of Mono and Tulare counties in 1866. That same year, the town of Independence, which had flourished due to the proximity of Camp Independence, became the county seat (Inyo County Board of Supervisors, 1966).

4.4.7.2 Mining (1850-1880s)

Beginning in 1850, gold and silver discoveries in the eastern Sierras ignited a major population increase in northern California as immigrants poured into Owens Valley seeking gold or the opportunities it presented (Robinson, 1979; Sauder, 1994; Wilke and Lawton, 1976). Gold, silver, and lead mining camps were established throughout the region. In 1865, the silver mine at Cerro Gordo, near Keeler, was discovered by Pablo Flores; it proved to be the richest silver strike in California. In the years between the 1850s and 1860s, mining was the single largest industry in Inyo County. Small mining camps grew into towns, while food and lumber production developed as secondary industries, which led to a need for infrastructure: complex communications and transportation networks sprang up to connect the towns and mines in the area.

The U.S. Army was well aware of the mineral properties of the Owens Lake deposits; in 1876, a survey team estimated that the lake water contained a 100-year-supply of sodium carbonite (Jones & Stokes, 2007:13). After 1877, silver and lead mining gradually began to decline at Cerro Gordo and other mining camps because the price of silver had dropped severely (Sauder, 1990:89).

4.4.7.3 Agriculture (1861-1920)

The abundance of grasslands in the northern portion of the valley was attractive to cattle ranchers. The first cattle drive into the area occurred in 1861 when cattle "were driven up via the south end of the valley from Kern County" (Vorster, 1992:271). Circa 1870s and 1880s, most immigrants to the Owens Valley region came for mining, but some stayed to farm and ranch. It was the miners' demand for supplies that inspired farmers to overcome the challenges that the arid nature of the region presented and led to the creation of permanent settlements (Sauder 1990:82). Cattle and sheep ranchers, in turn, came into the valley to support the various mining camps and the neighboring towns (Halford and Carpenter, 2005:13).

Most of the farms were in the northern portion of the valley, near the Bishop-Round Valley area where water was more plentiful (Babb, 1992:266; Sauder, 1990:83). During the 1870s and 1880s, the settlements of Cartago, Cottonwood Shade, Keeler, Lone Pine, Lone Pine Station, Olancha, and Swansea begin to appear on topographic maps. Ferguson's Landing was located at the northwest corner of the lake. Cottonwood Landing, also known as Stevens Wharf, was on the west central edge of the lake.

Farmers initially practiced the Midwestern three-crop rotation of corn, small grains, and alfalfa hay on small farms with horses, cows, cattle, and pigs. These small one-quarter section farms were located on the valley floor. Paiute laborers were hired to help maximize production, and surplus crops and livestock were sold to the mining settlements and the local markets at Bishop, Big Pine, Independence, and Lone Pine (Sauder, 1990:86). In the 1880s, barley was in demand in the mining centers, and replaced alfalfa in the three-crop rotation scheme. To meet the demand for livestock hay, alfalfa was grown as a single crop because it could yield two to three crops per year (Sauder, 1990:89).

In 1877, the Desert Land Act opened the Owens River for agricultural irrigation and encouraged the settlement of larger 640-acre tracts of arid land. Farmers established cooperative alliances for the financing and building of irrigation canals. The economic importance of agriculture had surpassed mining in the valley by the 1880s. Despite the economic downturn as the result of the mining industry slowdown, and the absence of a freight train that connected the valley with Los Angeles that could transport goods for sale, a system of seventeen ditches and canals sprawled 200 miles throughout the Owens Valley by 1901. One reason the ditch and canal construction continued was that valley residents hoped a rail line would one day be completed, to facilitate shipment of their goods to Los Angeles (Sauder, 1994).

The Owens Valley had developed into an established agricultural area by the early twentieth century (Babb, 1992:266). Crops included wheat, corn, barley, fruits, and vegetables; however, most of the irrigable land was used for growing hay and grazing cattle and sheep (Vorster, 1992:268, Newcomb, 1917). In 1920, irrigation was at its peak and watered 53,500 acres of pastureland and 23,000 acres of cropland (Babb, 1992:226).

4.4.7.4 Owens Valley Indian War (1861-1867)

According to Captain John W. Davidson, approximately 1,200 (or more) Native Americans lived near Owens Lake and the Owens River in 1859. Davidson's early account of Native American subsistence practices indicates that the peoples he encountered hunted deer, antelope and rabbit, collected piñon and acorn seeds and insect larva, irrigated fields of a "nutritious grass of which our horses were fond," and caught large quantities of the abundant small fish available in Owens River.

However, Davidson's report of plentiful resources contributed to the influx of Euro-American peoples that began arriving in the 1850s-1860s. This increase in non-native inhabitants severely affected the local plant and animal resources. "Cattle grazing on the valley's natural meadows resulted in the destruction of native plants, whose seeds and roots were the staples of the Paiute diet. The influx of livestock into the irrigated meadows subsequently depleted the Indians' winter food supply. Faced with no other choice for survival, the Paiute were forced to prey on the ranchers' cattle" (Sauder, 1990:82).

Isolated skirmishes occurred as early as the winter of 1849-1850 when the Jay-Hawker, Bennett-Manly party's oxen were impaled with arrows, and the Von Schmidt party reported fighting Indians one day during an 1855-1856 survey (Halford and Carpenter, 2005:14). Further violence between ranchers and Native Americans was recorded in 1861-1862 (Chalfant, 1933). In January, 1862, a treaty was signed by Chief George, Chief Dick, Little Captain Jim, and eleven whites, including Samuel Bishop, for whom the city of Bishop was named, but the treaty was short-lived and confrontations continued (Chalfant, 1933; Halford and Carpenter, 2005:14).

Other violent incidents occurred and various treaties were signed and broken during the later part of 1862. Hostilities broke out again in the spring of 1863 following a string of broken promises; most of these hostilities occurred in the southern portion of the valley. After the army destroyed all the native food resources, 400 Paiutes surrendered on June 4, 1863, and more shortly thereafter. On July 11, 1863, more than 900 Owens Valley Paiutes were moved to the San Sebastian Reservation near Fort Tejon (Lawton et al., 1976:31; Sauder, 1994:86).

Conflicts continued after July 1863 when the military left Camp Independence because of the presumption that the majority of the Native Americans had been taken to the reservation. However, it is likely that about two-thirds of the Native Americans avoided being taken to the reservation and remained in the Owens Lake area. The military returned to Camp Independence in December 1864 (Halford and Carpenter, 2005:16).
Although many of the Owens Valley Paiute returned to Owens Valley subsequent to their transfer to the reservation, the bulk of the Native American resistance had been halted and the Euro-American settlement of the area resumed by late 1865 (Halford and Carpenter, 2005:13). The last major recorded battle in the vicinity of the project areas occurred in 1865 (Chalfant, 1933). The repercussions of the "Indian War" were the deaths of 60 white settlers and soldiers and about 200 Paiutes (Bateman et al., 1995: Chalfant, 1933:228).

4.4.7.5 Transportation (1872-1960)

In the 1870s, two steamboats, *Bessie Brady* and *Mollie Stevens*, operated on Owens Lake. The *Bessie Brady*, christened on July 4, 1872, was the first vessel on any inland lake west of the Mississippi that was used solely for commercial purposes. The *Bessie Brady* was named after the eldest daughter of James Brady, one of the principal owners of the boat. Construction of the ship was commissioned by James Brady and D. H. Ferguson with financial assistance from the Owens Lake Silver-Lead Company, where James Brady was employed as superintendent (Lingenfelter 1962:151-154). Although many speculated that the ship was intended to be Brady's private yacht, the ship did provide an economical way for the Owens Lake Silver-Lead Company to transport bullion from the wharf at Swansea (on the northeastern end of the lake north of Keeler) to ground freight lines that continued on to the northern and southern markets.

Prior to the completion of the ship, several land speculators had purchased land around the lake and began building wharfs and other transportation-associated structures in anticipation of its completion; in total, five wharves were constructed around the lake. D.H. Ferguson built a wharf on land at the northwest corner of the lake and named it Ferguson's Landing before the wharf was finished. In June 1872, John Baptiste Daneri, a local merchant began construction of "a large warehouse and store at the southwest shore of the lake at the head of the road to Los Angeles" (Lingenfelter, 1962:154). This development went unnamed for at least six months. Eventually, it became known as Cartago (also known as Danerisburg or Daneri's landing, and Lakeville) and was the major port on the lake because its strategic location enabled the control of all bullion shipments out of the area and almost all freight shipments into the area. A third wharf was constructed at Cottonwood, near the mouth of Cottonwood Creek on the west side of the lake, between Ferguson's Landing and Cartago, to assist in the transport of lumber and charcoal to be used to fuel the local mines. By early August 1872, the *Bessie Brady* made daily roundtrips from Swansea to Daneri's Landing near Cartago, transporting bullion southward and supplies northward, and had put their ground freight competition out of business (Lingenfelter, 1962:154-156).

In October 1872, Brady sold his interest in the steamer to John Daneri, who along with Ferguson, incorporated the company into the existing Owens Lake Steam Navigation Company. However, the *Bessie Brady's* transportation efficiency became a detriment when the ground freighters could not keep up in hauling the bullion away, resulting in a backlog of bullion at the wharf at Cartago.

> By the first of January, 1873, a crisis was reached when 181,000 bars of bullion were being held up awaiting shipment south. Of these 12,000 bars were stacked on the wharf and in the street at Cartago. Since this bullion represented a total of $600,000 lying idle, the mining companies were forced to cut back their production until the bullion could be hauled away to be sold. By, March 15, however, the situation had not improved, and there were still 17,000 bars awaiting shipment—nearly all at Cartago where some had been stacked to make shelters by unemployed miners. Even before this time the smelting furnaces had been forced to close down altogether and bullion shipment from lack of business had stopped. Since freighting too had dwindled from lack of business the *Bessie Brady* could no longer afford to cross the lake and she was taken up river to mooring. Within weeks the Owens Lake Steam Navigation Company had folded (Lingenfelter, 1962:157).

To fill the void left by the closure of the Owens Lake Steam Navigation Company, a new venture called the Cerro Gordo Freighting Company, headed by M.W. Belshaw, an owner of the Cerro Gordo Mine, and Remi Nadeau, a Los Angeles teamster, purchased all of the old freighting contractor's interests and placed 56 freight teams on the road that year. At this time, "Belshaw purchased Daneri's interest in the Bessie Brady and in September [1873] he built a new wharf on the southeastern side of Owens Lake, six miles south of Swansea, at the foot of the 'yellow grade' leading up to Cerro Gordo" (Lingenfelter, 1962:157). Soon thereafter, the Bessie Brady began regular trips from Cerro Gordo Landing near Keeler to Daneri's Landing at Cartago. In 1875, Ferguson sold his interest in the Bessie Brady to Casper Titchworth, a steam boater from

Michigan who piloted the boat until ca. 1877 when he may have sold his interest to Remi Nadeau (Lingenfelter, 1962:157-158).

In May 1877, the smaller *Mollie Stevens*, built by the Inyo Lumber and Coal Company which was incorporated in 1876 by Sherman Stevens who owned the sawmill on Cottonwood Creek, was launched at Cottonwood Landing, also known as Stevens Wharf. However, only a couple of days after its launch, heavy winds caused the undecked boat to sink and the *Bessie Brady* came to the rescue and raised the *Mollie Stevens.* In early June 1877, the *Mollie Stevens* began transporting supplies including lumber, wood, and charcoal from Cottonwood Landing to Cerro Gordo Landing (at Keeler). The *Mollie Stevens'* life was short-lived because of a slowdown in mining activities and the boat was virtually docked by the end of 1878, spending most of its time at Cottonwood (Lingenfelter, 1962:159).

Captain Julius M. Keeler arrived in the area during the winter of 1879 and purchased a number of mining properties near Cerro Gordo with the plan of constructing a stamp mill on the eastern shore of the lake, now known as Keeler. To facilitate construction of the mill, the *Mollie Stevens* was put into service again in October 1880 to haul lumber from Cottonwood Landing to Keeler. The mill was completed ca. March 1881 and the *Mollie Stevens* continued to make trips across the lake hauling wood to fuel the mill's steam-driven stamps (Lingenfelter, 1962:159-160).

The *Bessie Brady* continued service until 1879 when she was moved to Ferguson's Landing where her machinery was removed (Lingenfelter, 1962:159). In the spring of 1882, the hull of the *Bessie Brady* was towed to Keeler to be refitted. The *Bessie Brady's* hull was reconditioned and the engine from the dismantled *Mollie Stevens* was transferred into *Bessie Brady*. Unfortunately, the *Bessie Brady* was destroyed by fire on May 11, 1882 before the rehabilitation was completed and all steamship operations on the lake ceased (Chalfant, 1933; Jones & Stokes, 2007:13-14; Likes, 2010; Lingenfelter, 1962:160).

To service the mining communities on the east side of the Owens Valley, the Carson & Colorado (C&C) Railroad Company was established in 1880. Known locally as the Slim Princess, the narrow three-foot gauge railroad began in Mound House, Nevada, and by July 1883 had reached Keeler, California. The line was originally intended to run from the Carson River to the Colorado River, but construction was halted when the mining industry declined. In March 1900, the C&C Railroad was receptive to the Southern Pacific (S.P.) Railway's offer to purchase the failing railway. The S.P. retained the C&C as a wholly owned subsidiary between 1900 and 1905, and then converted the C&C into the Nevada & California Railroad Company, also wholly owned by the S.P. (Turner, 1965).

The 31-mile Benton to Laws segment of the narrow-gauge railroad was abandoned in 1943, which left a 70-mile line between Laws and Keeler. This line "was increasingly dependent on moving talc from on-line mines to the gravity transfer trestle at Owenyo" (Turner 1963:440). On April 29th, 1960, the Keeler to Laws line train orders officially abandoned the remaining track, and work began to remove the track and lay asphalt in Keeler that very morning for the impending truck service (Turner n.d.; Turner 1963:440).

With the impending construction of the Los Angeles Aqueduct (see Section 4.4.7), a standard gauge branch, the S.P.'s Jawbone Branch from Mojave to Owenyo running through the Mojave

Desert, was added in 1910 for transporting equipment and supplies to the work site. Following completion of the Los Angeles Aqueduct in 1913, the Jawbone Branch of the Mojave-Owenyo Line declined. Dismantling of the railroads began in the mid-1930s after mining operations slowed, and railroad usage was virtually halted by the 1960s after U.S. Highway 395 and State Route 14 improved truck and automobile transportation through the area (Jones & Stokes, 2007:14; Turner, 1965). The Mojave-Owenyo Line was finally abandoned in 1982 and evaluated for historical significance in 1993. The line was recommended ineligible for listing in the National Register of Historic Places (NHRP) (Jones & Stokes, 2007:15).

4.4.7.6 Soda Ash Manufacturing Industry (1885-1956)

L.F.J. Wrinkle began reclaiming soda and other salts from the lake in early 1885 by constructing a series of vats along the lakeshore from which the water would evaporate, leaving the minerals behind. The original notice includes the names of 839 persons, indicating that a large area was claimed. Noah Wrinkle, son of L.F.J., developed a chemical process which allows for the recovery of a wider range of products and less dependent on the density of the water used' this became the foundation of the Natural Soda Products Company (Chalfant 1933:300). In 1887, the Inyo Development Company (IDC), formed by Nevada capitalists continued to collect residue from the original vats, and began production of trona (sodium carbonate) along the eastern shore of Owens Lake, north of Keeler (Chalfant 1933:300; Margerum, 2003; VerPlank, 1959). The process entailed pouring Owens Lake water in large vats; trona then formed at the bottom through solar evaporation. After draining the vats in the fall months, the trona was harvested and transported to market by train.

In 1908, the former superintendent Noah Wrinkle, and other prior employees of IDC established the Natural Soda Products Company (NSPC) approximately 2 miles south of Keeler (Margerum, 2003; Sapphos, 2007; VerPlank, 1959). It was sited at Jiggerville, just south of a series of soda vats resulting from an expansion by IDC. Jiggerville was the previous locality of a boat landing at Owens Lake and it was a stop on the Carson and Colorado Railroad (Leadabrand, 1967). Financiers Wilfred and Mark Watterson from Bishop became involved with the business in 1912, and with their oversight, production increased and NSPC became profitable.

4.4.7.7 The Los Angeles Aqueduct (1904-present)

The population of Los Angeles rapidly increased around the turn of the century. By 1904, city managers identified the need for an additional source of water supply. At least five different alternatives were being studied when the City of Los Angeles, and specifically William Mulholland, decided to pursue water from the Owens River. The federal government approved an aqueduct project in 1906. The following year, citizens of Los Angeles approved a bond to purchase more than 135,000 acres of land for water rights, reservoirs, and rights of way (City of Los Angeles, 1916). Approximately 24.5 million dollars in bonds were authorized to pay for the project (Hundley, 2001).

Aqueduct construction began in 1908, and by 1913, Owens River water was available in the San Fernando Valley. Originally, four reservoirs, including Haiwee, Fairmont, Dry Canyon, and San Fernando, were completed as part of the first Los Angeles Aqueduct (LAA1) to help regulate the flow of water, as well as store, aerate, and control sediment. Not only did the aqueduct bring water to Los Angeles, but it also provided opportunities to generate hydroelectric power. Four principal areas were identified, and in 1910 another bond was passed to raise money for hydroelectric plants: San Francisquito 1 (1914) and 2 (1920, rebuilt in 1928), Haiwee (1927), and San Fernando. Hydroelectric power plants were also installed at Cottonwood Creek and Division Creeks 1 & 2 (1908-1909) to generate electricity for aqueduct construction.

4.4.8 Phase 7a Records Search and Field Work

4.4.8.1 Records Search

A records search completed at the Eastern Information Center (EIC) at the University of California Riverside for the entire Owens Dry Lake, conducted in 2009 for the OLDMP was reviewed for this project. Additionally, a supplemental records search was performed on May 12, 2011 at the EIC to obtain site records not provided in the earlier records search. The following sources were consulted:

- EIC base maps: USGS series topographic quadrangles.
- Pertinent survey reports and archaeological site records were examined to identify recorded archaeological sites and historic-period built-environment resources (such as buildings, structures, and objects) within or immediately adjacent to the project areas.
- The California Department of Parks and Recreation's California Inventory of Historic Resources (1976) and the Office of Historic Preservation's Historic Properties Directory (2007), which combines cultural resources listed on the California Historical Landmarks, California Points of Historic Interest, and those listed in or determined eligible for listing in the NRHP or the CRHR.

A paleontological fossil locality search for Owens Lake was conducted on July 12, 2010, using the Berkeley Natural History Museum (BNHM) online database, which includes data from the University of California, Museum of Paleontology. The database search identified 733 fossil localities within Inyo County. They include 19 specimens from the Precambrian, 281 from the Cambrian, 146 from the Ordovician, 35 from the Silurian, 106 from the Carboniferous, 80 from the Permian, 35 from the Tertiary, 7 from the Quaternary, 14 of unknown age and 10 disputed fossils. The 2008 SIP SEIR (GBUAPCD, 2008b) summarized records searches conducted with the San Bernardino County Museum, the Natural History Museum of Los Angeles County, and the Eastern California Museum in Independence. Surveys in 2003 identified seven fossil localities on the Owens Lake playa between Swansea and Keeler along SR 136.

Previously Recorded Cultural Resources

The two records searches indicate that at least 32 prior cultural resource studies have been conducted within a 0.5-mile radius of the project areas (**Table 4.4-3**, **Figure 4.4-1**). The records searches reveal Sapphos Environmental in 2007 surveyed DCAs T1A-3, T1A-4, T12, T32-1, T37-1, and T37-2 during the Phase 7 project, but the survey did not include the three new water pipeline options or the access roadway. At that time, prehistoric and historic sites and isolates were identified in the Phase 7a DCAs. [Note that isolated artifacts do not meet the definition of unique archaeological or historical resources under CEQA (CEQA §21083.2. (g), and are generally not evaluated further or considered for avoidance or mitigation.] ICF Jones and Stokes performed Phase II evaluative testing and determined none of the nine sites were eligible for listing in the CRHR (ICF Jones and Stokes, 2008).

Three prehistoric archaeological sites in the Phase 7a project areas were evaluated during earlier studies by Eerkens (1997), Jones and Stokes (2002), and Trans-Sierran Archaeological Research (2005) and determined to qualify as CRHR-eligible resources. Sapphos (2003), Ancient Enterprises (2003), Gallegos and Associates (2000), Jones and Stokes (2005) also identified and recorded archaeological sites in the Phase 7a area, but none were found to be unique resources. Further, GANDA identified new archaeological resources during construction monitoring for Phase 7; two of these sites were evaluated during the Phase 7 construction phase and found not to qualify as NRHP eligible historic properties or CRHR eligible historical resources, and the remaining resources were avoided by Phase 7 construction. One of the unevaluated resources is located in Parcel T5-3 (originally considered as a Transition Area for the Phase 7a project area); the rest are outside the Phase 7 and 7a project areas (GANDA, 2010a).

Table 4.4-3
Previously Recorded Archaeological Resources in the Phase 7a Project Area

DCA	Study/ Year	Resources	Evaluation Status
T1A-3	Sapphos 2007, ICF Jones and Stokes 2008	prehistoric site	Evaluated as not eligible for the CRHR by ICF Jones and Stokes 2008
			Evaluated as not eligible for the CRHR by ICF Jones and Stokes 2008
		historic site	Evaluated as not eligible for the CRHR by ICF Jones and Stokes 2008
		Isolates	Not eligible for the CRHR
T1A-4	Sapphos 2007, ICF Jones and Stokes 2008	prehistoric and historic isolates	Not eligible for the CRHR
T12	Sapphos 2007, GANDA 2010b	No cultural resources were identified during survey by Sapphos in 2007 or during monitoring by GANDA (2010b).	
T32-1	Sapphos 2007, Jones and Stokes 2008	prehistoric sites	Evaluated as not eligible for the CRHR by ICF Jones and Stokes 2008
		Artifact piles	Identified as collector piles and unevaluated by ICF Jones and Stokes 2008
T37-1	Sapphos 2007, ICF Jones and Stokes 2008	prehistoric sites	Evaluated as not eligible for the CRHR by ICF Jones and Stokes 2008
T37-2	Sapphos 2007, ICF	historic site	Evaluated as not eligible for the CRHR by ICF Jones and Stokes 2008

DCA	Study/ Year	Resources	Evaluation Status
	Jones and Stokes 2008		
	Sapphos 2007	prehistoric and historic isolates	Not eligible for the CRHR
Water Pipeline Corridor – Option A	Eerkens 1997	prehistoric site	Evaluated as eligible for the CRHR by Eerkens 1997
Water Supply Pipeline Corridor– Option B	Jones and Stokes 2002	prehistoric site	Evaluated as eligible for the CRHR by Jones and Stokes 2002
Water Supply Pipeline Corridor – Option C		No cultural resources	
T28N		No cultural resources	
T28S		No cultural resources	
T30-1_a and T30-1_b	Ancient Enterprises 2003, Jones and Stokes 2005	prehistoric sites	Evaluated as not eligible for the CRHR by Jones and Stokes 2005.
	Trans-Sierran Archaeological Research 2005	prehistoric site	Evaluated as not eligible for the CRHR by Trans-Sierran Research in 2005
		preshistoric site	Evaluated as eligible for the CRHR by Trans-Sierran Research in 2005
	Ancient Enterprises 2003	prehistoric isolates	Not eligible for the CRHR
T36-1_b	Jones and Stokes 2002	prehistoric isolates	Not eligible for the CRHR

4.4.8.2 Previously Recorded Paleontological Resources

Numerous fossil localities were identified by paleontological monitors during construction of OLDMP Phases 5, 7 and 8 (2006 to 2012) (Jones & Stokes, 2008; Garcia and Associates 2010a). Paleontologically sensitive locations in T30-1 were identified during Phase 5. Grading at a depth of 2 feet in the T30-1 area yielded a fossilized Pronghorn antelope partial skull and horn found in context with archaeological artifacts. During Phase 7, T21, T17-1, T17-2, T16, T9, T5-1, T1A-1, and T1A-2-a were determined to be paleontologically sensitive areas (Garcia and Associates, 2010a). During OLDMP Phase 8 (2011 to 2012) fossils were recovered from the northern portion of T37-1 and Areas A and B, including a pelvis bone from a grey wolf (Garcia and Associates, 2012c). The paleontologists obtained samples of the fossils, which comprise fish, birds, mammals, mollusks, plants, and stromatolites found in both playa and subsurface contexts.

Unique fossil resources have been identified in Owens Lake DCAs, such as species of fish that diverge from other similar species. Paleontological remains are considered to be limited, nonrenewable, scientific, and educational resources. Some fossils recovered at Owens Lake qualify as unique resources because they represent the best examples of specific species found in the region, particularly if they are discovered in an undisturbed context. Other fossils in this collection qualify as unique paleontological resources because they provide evolutionary, paleoclimatic, or paleontological data important to our understanding of geologic history (SVP, 1996).

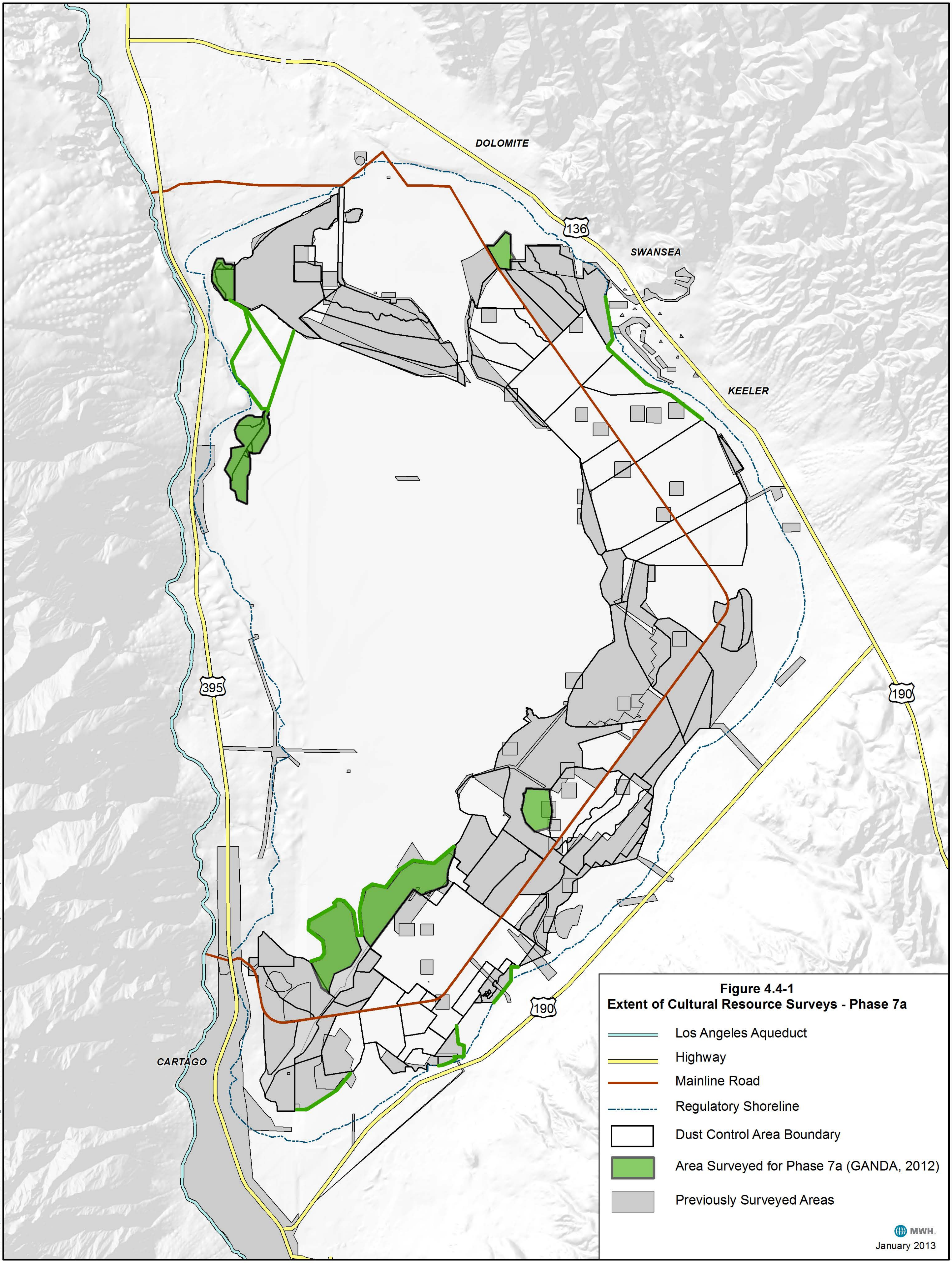
Figure 4.4-2 indicates paleontologically sensitive areas based on prior studies performed at Owens Lake, including prior studies in the vicinity of the Phase 7a project areas.

4.4.8.3 Native American Consultation

Correspondence with Native American tribes relative to the project area began in 2008, with the consultations conducted for the Phase 7 project (ICF Jones and Stokes, 2008). At the onset of the Phase 7 project, ICF Jones & Stokes contacted the NAHC with a request for a sacred lands search. The NAHC responded that although no known sacred sites are within the project area, sacred lands are located nearby. Each interested tribe and individual listed in the NAHC's letter to ICF Jones & Stokes was mailed a letter, which included a project description and an invitation to attend an informational meeting regarding the testing and evaluation of 29 sites within the Phase 7 area. ICF met with four tribal members to discuss the project on March 27, 2008. On July 8, 2008, the Bishop Paiute Tribe sent a letter to ICF Jones & Stokes to request project management by an archaeologist who meets the Secretary of the Interior's Standards and monitoring by a Native American representative during all fieldwork. Representatives from the Lone Pine Paiute-Shoshone Tribe were present throughout the duration of excavations by ICF Jones & Stokes. Further, Native American representatives were present throughout construction of the Phase 7 project in 2008-2010.

A 2010 search of the Sacred Lands File housed at the NAHC did not identify any Native American cultural resources within a 0.5 mile radius of the Phase 7a project areas, but Native American cultural resources are reported on adjacent USGS topographic quadrangle maps (Singleton, 2010).

The NAHC identified 14 Native American groups and individuals relevant for the Phase 7a project (**Appendix B**). Via letters sent on July 20, 2010, each group or individual was asked to provide pertinent information or to express any concerns they may have about the proposed project. Telephone calls were placed to follow-up with the letters (**Table 4.4-4**). Correspondence was received by Mr. Ron Nichols (LADWP General Manager) from the Acting Chairperson of the Lone Pine Paiute-Shoshone Reservation (M. Wuester, pers. comm., February 3, 2012). The letter states that, "Avoidance is the best mitigation." The tribe states that, "The sacred cultural sites which are scheduled to be destroyed in future phases of the Owens Lake Dust Mitigation Project are too valuable to lose." In response to the Tribe's concerns, LADWP staff and project archaeologists have had numerous discussions with Ms. Kathy Bancroft, the Cultural Resources Officer for the Lone Pine Paiute-Shoshone Reservation. Ms. Bancroft has been kept appraised throughout the survey, excavations, and geotechnical construction phases of the project.


DOLOMITE
136
SWANSEA
KEELER
395
190
CARTAGO
Figure 4.4-1
Extent of Cultural Resource Surveys - Phase 7a
Los Angeles Aqueduct
Highway
Mainline Road
Regulatory Shoreline
Dust Control Area Boundary
Area Surveyed for Phase 7a (GANDA, 2012)
Previously Surveyed Areas
MWH
January 2013
Path: \\Uspas1s01\MUNI\Clients\Los Angeles Water&Power\Owens Valley Data\Owens Valley GIS\Projects\Phase8\AllCulturalStudies\AllCulturalStudies.mxd

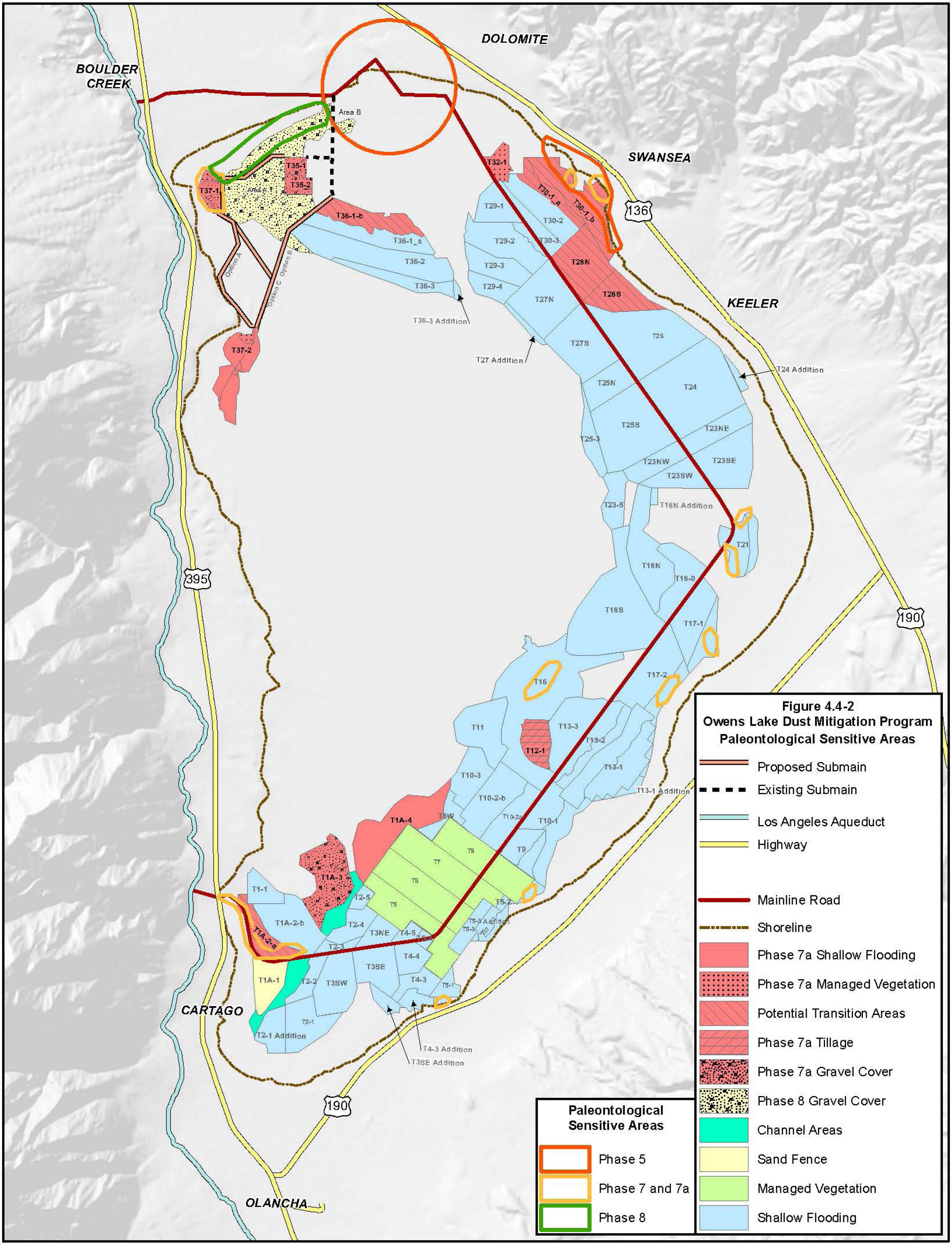


Figure 4.4-2
Owens Lake Dust Mitigation Program
Paleontological Sensitive Areas
Proposed Submain
Existing Submain
Los Angeles Aqueduct
Highway
Mainline Road
Shoreline
Phase 7a Shallow Flooding
Phase 7a Managed Vegetation
Potential Transition Areas
Phase 7a Tillage
Phase 7a Gravel Cover
Phase 8 Gravel Cover
Channel Areas
Sand Fence
Managed Vegetation
Shallow Flooding
Paleontological Sensitive Areas
Phase 5
Phase 7 and 7a
Phase 8
DOLOMITE
BOULDER CREEK
SWANSEA
KEELER
CARTAGO
OLANCHA
395
136
190
Area B
Area A
Option A
Option B
Option C
T36-3 Addition
T27 Addition
T24 Addition
T16N Addition
T13-1 Addition
T2-1 Addition
T4-3 Addition
T3SE Addition

Table 4.4-4
Native American Consultation – Phone Summary

Contact	Tribe/Group
David Moose	Chairperson, Big Pine Band of Owens Valley
Joe Kennedy	Chairperson, Timbisha Shoshone Tribe
William Vega	Chairperson, Bishop Paiute Tribe
Ron Wermuth	Tubatulabal, Kawaiisu, Koso, Yokuts
Carl Dahlberg	Chairperson, Fort Independence Community of Paiute
Brian Adkins	Environmental Manager, Bishop Paiute Tribe
Melvin R. Joseph	Chairperson, Lone Pine Paiute-Shoshone Reservation
Sanford Nabahe	Tribal Administrator, Lone Pine Paiute-Shoshone Reservation
Wilfred Nabahe	Environmental Coordinator, Lone Pine Paiute-Shoshone Reservation
Robert Robinson	THPO, Kern Valley Indian Council
Sandy Jefferson Yonge	Cultural Representative, Lone Pine Paiute-Shoshone Reservation
Theresa Stone-Yanez	THPO, Bishop Paiute Tribe
Barbara Durham	THPO, Timbisha Shoshone Tribe
Bill Helmer	THPO, Big Pine Band of Owens Valley

Native American representatives received notification of a combined project scoping meeting for the Phase 8 and Phase 7a projects via letters mailed on March 23, 2011. The meeting was held on April 11, 2011 by LADWP at their office in Keeler, California. Five tribal representatives were present at the meeting that detailed proposed archaeological survey and excavations for Phases 7a and 8. Ms. Kathy Bancroft (Tribal Historic Preservation Officer, THPO) and other representatives from the Lone Pine Paiute-Shoshone Reservation expressed a desire to monitor during archaeological excavations and construction.

LADWP staff met with the Lone Pine Paiute-Shoshone on February 28, 2012 to present preliminary findings from the Phase II archaeological investigation. The tribe recommended avoidance of cultural resources. On March 28, 2012, LADWP staff and project archaeologists from Garcia and Associates (GANDA) conducted a presentation of initial field work results from the Phase II archaeological investigation. Representatives from GBUAPCD and the Lone Pine Paiute-Shoshone (Ms. Bancroft) attended. Draft sections of the Phase II report were provided to Ms. Bancroft on May 31, 2012 and LADWP hosted bi-weekly conference calls in June to obtain feedback from the tribe. LADWP received comments on the draft Phase II report from Ms. Bancroft on June 25, 2012, and a final version of the report was submitted to the Lone Pine Paiute-Shoshone on August 20, 2012. A Native American consultation meeting was then held on June 28, 2012 at the LADWP office in Keeler, California. Two tribal representatives were present in Keeler, one person attended via telephone conference, and one person attended by videoconference from LADWP offices in Los Angeles.

4.4.8.4 Phase I Cultural Resources Pedestrian Surveys

Prior to conducting a Phase I archaeological pedestrian survey of the Phase 7a project area, a letter of non-objection was received from the CSLC on May 3, 2011; however, after determining that additional locations required survey and evaluations, a second letter of non-objection was received from the CSLC on June 28, 2011. A Phase I archaeological pedestrian survey was conducted from May 12, 2011 to August 10, 2011 over 2,217 acres of the Phase 7a project area. The survey was carried out over the course of three fieldwork rotations: July 7-14, 2011; July 21-28, 2011; and August 5-10, 2011. Areas surveyed were: T1A-3, T1A-4, T12-1, T32-1, T37-1, T37-2, and three potential water supply pipeline alignments (between T37-1 and T37-2, and T36 and T37-2) (survey width of 200 feet). From May 10-13 and May 19-26, 2011, archaeologists also surveyed areas of potential berm reconfiguration along the periphery of parcels T2-1, T5-1, T5-1 Addition, T5-3, T26, T28N, T28S, and T30-1_b, and the parcels described above. The berm surveys encompassed a 25 foot wide linear corridor, approximately 18 miles in length. The ground was dotted with only sparse desert shrub, so visibility was excellent, generally 75 to 100 percent. All areas were surveyed using 5 meter transects, largely dependent on ground visibility. DCA T12-1 was submerged and inaccessible to survey until January 5 and 10, 2012. Further, a portion of potential water supply pipeline alternative, Option C, was re-surveyed from May 21 to 23, 2012 to reroute the pipeline to avoid an archaeological site. An additional survey was conducted along an access road route from Hwy 395 on May 23 to 25, 2012.

During the Phase I survey, 106 archaeological sites were recorded (90 new and 16 previously recorded). One additional site is located within the Phase 7a project area; 7A-117 was identified during monitoring of geotechnical testing. The sites represent evidence of prehistoric chipping stations, short-term residences, food production sites, plant processing locations, and seasonal and/or long term residential sites; rock features and alignments, trade items, historic telecommunication and water systems; historic debris scatters; and multi-component artifact scatters. Specific types of artifacts include projectile points, bifaces, scrapers, edge-modified and utilized flakes, cores, hammerstone, metates, manos, fire-affected rock, rock cairns, and shell beads. Of particular note are sites represented by historic bullets, musket balls, gunflints, and other historic items that may be related to the documented Indian Wars of 1861-1867.

4.4.8.5 Phase II Cultural Resources Evaluations

During the 2011 Phase I survey, 106 archaeological sites were recorded. One more site within the Phase 7a project area remains unevaluated; 7A-117 was discovered during Phase 7a geotechnical monitoring. Of the 16 previously evaluated sites identified in the Phase 7a area, 10 were re-evaluated because new information and/or features were identified during the 2011 survey. Although the pedestrian survey yielded 90 new sites, only 70 of these sites were evaluated because 18 sites are now outside the project area and will be avoided during Phase 7a construction, one resource was reassigned as an isolate, and one resource was re-categorized as a natural occurrence (non-cultural). During the course of evaluative testing, some site boundaries expanded, so in four separate instances, two or more sites merged to become one enlarged site; this recombination of sites reduced the number of new sites from 70 to 63.

Therefore, Phase II testing and evaluation was conducted for 73 archaeological sites (63 new sites, which include 7 sites that have now merged into other sites, and 10 previously recorded sites) in order to reconstruct site histories and explore how they compare with our understanding of prehistoric and historic human behavior and adaptive strategies within the region (**Table 4.4-5**). Only archaeological sites identified within areas that will be directly impacted by construction were evaluated for CRHR significance. Further, resources characterized as historic era isolates or prehistoric isolates were not evaluated further since they do not meet the definition of unique archaeological resources or historical resources under CEQA, and do not require avoidance or mitigation.

To evaluate the 73 resources further, a research design and testing plan for a Phase II cultural resources study was provided to the CSLC on July 14, 2011 for their approval. In September of 2011, LADWP requested a permit from the CSLC to perform archaeological Phase II testing and evaluation in the Phase 7a area in order to determine the significance of newly recorded sites. The Archaeological Testing permit was received on September 1, 2011. Between September 23, 2011 and January 13, 2012, archaeologists conducted the Phase II cultural resources evaluations. The purpose of the Phase II study was to test the significance of the sites and determine their eligibility for the CRHR.

In total, archaeologists excavated 26 Test Excavation Units (TEUs) and 236 Shovel Test Pits (STPs), and collected artifacts in 59 Controlled Surface Collection Units (CSCUs). [Significant artifacts collected during the field work for the project will be curated at the Archaeological Curation Unit the University of California, Riverside; remaining artifacts will be delivered to the CSLC, and subsequently transmitted to the Lone Pine Paiute-Shoshone.] The sites consist of prehistoric lithic scatters, temporary camps, rock alignments, seasonal and/or long term residential sites; historic telecommunications and water systems; historic debris scatters, and multi-component artifact scatters. Surface and subsurface data, coupled with geomorphic, sedimentary and stratigraphical analysis, indicate the sites consist of primary cultural deposits emplaced on natural lacustrine beach strandline deposits subjected to climate-forced lake transgressions and regressions that have sealed and re-exposed various components and sequences of these deposits. Moreover, portions of the sites are in dynamic equilibrium in which the site surfaces are subject to migrating sand sheet deposits that seasonally wax and wane.

Table 4.4-5
Summary of Status of Phase 7a Project Area Archaeological Sites

Sites previously recorded and evaluated			New sites identified during 2011/2012 survey	
Sites not re-evaluated	**Sites not re-located**	**Sites re-evaluated**	**Sites evaluated**	**Sites not evaluated**
CA-INY-6365; CA-INY-7431H Sites now outside the project area: CA-INY-5207; CA-INY-7448	CA-INY-6366; CA-INY-6389	CA-INY-7413; CA-INY-7414; CA-INY-7415; CA-INY-7416/H; CA-INY-7421; CA-INY-7430/H; P14-9563; P14-9681; CA-INY-7442; CA-INY-7443	7A-002/H; 7A-006; 7A-009; 7A-010; 7A-011/H; 7A-012/H (includes 7A-040/H); 7A-032; 7A-038H; 7A-042; 7A-046/H (includes 7A-043I, 7A-44/H, and 7A-045/H); 7A-047; 7A-048/H (includes 7A-049/H and 7A-050/H);	Sites now outside the project area: 7A-005; 7A-007; 7A-008; 7A-013; 7A-015/H; 7A-016; 7A-021; 7A-022; 7A-023; 7A-024; 7A-025/H; 7A-027/H; 7A-029; 7A-030/H; 7A-031H; 7A-036;

Sites previously recorded and evaluated			New sites identified during 2011/2012 survey	
Sites not re-evaluated	**Sites not re-located**	**Sites re-evaluated**	**Sites evaluated**	**Sites not evaluated**
			7A-051H; 7A-052/H; 7A-053H; 7A-054; 7A-055; 7A-059H; 7A-060; 7A-061; 7A-062; 7A-063; 7A-064; 7A-065; 7A-066; 7A-067; 7A-068; 7A-069; 7A-070; 7A-072; 7A-073; 7A-074/H; 7A-075/H; 7A-076; 7A-077; 7A-078 (includes 7A-087); 7A-081; 7A-082; 7A-083; 7A-084; 7A-085; 7A-086; 7A-088/H; 7A-089H; 7A-090; 7A-091; 7A-092H; 7A-093H; 7A-095H; 7A-096; 7A-097/H; 7A-100H; 7A-101; 7A-102; 7A-103; 7A-104; 7A-105; 7A-107; 7A-109; 7A-110; 7A-111; 7A-112; 7A-114	7A-037; 7A-080H Determined not to represent archaeological sites: 7A-057H; 7A-113 Sites slated for avoidance: CA-INY-6065; CA-INY-6660; 7A-117.

CRHR Eligibility. CEQA defines significant historical resources as "resources listed or eligible for listing in the California Register of Historical Resources (CRHR)" (Public Resources Code Section 5024.1).

A historical resource may be eligible for inclusion in the CRHR if it meets the following criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States [Criterion 1]; or
2. It is associated with the lives of persons important to local, California, or national history [Criterion 2]; or
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values [Criterion 3]; or
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation [Criterion 4].

The following criteria qualify an archaeological site to be a unique resource eligible for listing in the CRHR (PRC Section 21083.2(g)):

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important or historic event or person.

Evaluative testing revealed that 11 sites contain dense, intact, primary cultural deposits that have yielded information important to the prehistory of the local area and California (Criterion 4), and are therefore eligible for listing under the CRHR (**Table 4.4-6**). Three of the 11 sites (CA-INY-7414, CA-INY-7413/H, and CA-INY-7415/H) are associated with events and patterns of events that have made a significant contribution to the broad patterns of local and regional history, and the cultural heritage of California (Criterion 1), namely the Owens Valley Indian Wars (1861-1867). These three sites are also recommended eligible for the CRHR under Criterion 1, for their association with important events in California.

Table 4.4-6
Summary of Significant Cultural Resources
Located within the Phase 7a Project Area

Site	Site Type and Constituents	Period	Reason for CRHR Eligibility
CA-INY-7413/H	Seasonal and/or long-term prehistoric habitation site exhibiting tool production and food processing activities, and 1860s ethnohistoric ammunition	Lake Mojave Period (9000 B.P. to 6000 B.P.) - Marana Period (650 B.P. to Contact)	The site is eligible under Criterion 1 for its association with the Indian War era of 1861-1867 at Owens Lake, considered an important period in California history. The site is also eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7414	Large, seasonal and/or long-term prehistoric habitation site indicating lithic tool production and/or maintenance, and groundstone stations	Little Lake (6000 B.P. to 3150 B.P.) - Marana (650 B.P. to Contact)	The site is eligible under Criterion 1 for its association with the Indian War era of 1861-1867 at Owens Lake, considered an important period in California history. The site is also eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.

Site	Site Type and Constituents	Period	Reason for CRHR Eligibility
CA-INY-7415/H (Locus A)	Large, seasonal and/or long-term prehistoric habitation site reflecting tool production and food processing	Lake Mojave Period (9000 B.P. to 6000 B.P.) - Marana Period (650 B.P. to Contact)	The site is eligible under Criterion 1 for its association with the Indian War era of 1861-1867 at Owens Lake, considered an important period in California history. The site is also eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7421	Large, high density seasonal camp - chipping station reflecting tool production/maintenance and hunting activities	Newberry Period (3150 B.P. to 1350 B.P.) - Haiwee Period (1350 B.P. to 650 B.P.)	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7442	Large, seasonal and/or long-term occupation reflecting tool production and food processing activities	Little Lake Period (6000 B.P. to 3150 B.P.)-Marana (650 B.P. to Contact)	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-7443	Large, seasonal and/or long-term prehistoric habitation represents lithic and groundstone production and/or maintenance	End of Newberry Period (1350 B.P.)-Marana Period (650 B.P. to Contact).	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-8911	Small chipping station reflecting tool production	Little Lake Period (6000 B.P. to 3150 B.P.)-Marana (650 B.P. to Contact)	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.

Site	Site Type and Constituents	Period	Reason for CRHR Eligibility
CA-INY-8918	Large, moderately dense chipping station reflecting tool manufacture/maintenance and hunting activities	Newberry Period (3150 B.P. to 1350 B.P.) - Marana Period (650 B.P. to Contact).	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-8938/H	Large multi-component prehistoric site exhibiting a moderately dense prehistoric tabular tool scatter reflecting plant harvesting and/or food processing and lithic reduction	Indeterminate	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-8942/H	Large multi-component site comprising a lithic chipping station	Newberry Period (3150 B.P. to 1350 B.P.) - Haiwee Period (1350 B.P. to 650 B.P.).	The site is eligible under Criterion 4 because it represents a primary deposit with sufficient density, diversity, and integrity of its archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.
CA-INY-8964	Large lithic chipping station exhibiting a moderately dense prehistoric tabular tool scatter reflecting plant harvesting and/or food processing and lithic tool reduction	Late Newberry Period (3150 B.P. to 1350 B.P.) through the Haiwee Period (1350 B.P. to 650 B.P.)	The site is eligible under Criterion 4 because it contains two intact deposits with sufficient density, diversity, and integrity of their archaeological constituents and contains information important to understanding prehistoric use of the Owens Lake shoreline.

4.4.8.6 Summary of Cultural Resources Review Process

Table 4.4-7 below summarizes the Phase 7a project review process from the initial request for a letter of non-objection from the CSLC to submittal of the Final OLDMP – Phase 7a Phase II Archaeological Testing and Evaluation Report to the California State Historic Preservation Office (SHPO) for review and concurrence.

Table 4.4-7
Summary of Phase 7a Cultural Resources Review Process

Agency/Reviewer	Date	Description
CSLC	March 1, 2011	Garcia and Associates submitted a proposal to the CSLC and a request for a letter of non-objection
Kathy Bancroft - Lone Pine Paiute-Shoshone Tribe	March 7, 2011	Consultation regarding Phase 7a survey and Phase II Testing and Evaluation.
Lone Pine Paiute-Shoshone Tribe	March 23, 2011	Letter from LADWP to the tribe inviting them to attend a project scoping meeting in Keeler
Lone Pine Paiute-Shoshone Tribe	April 11, 2011	Scoping meeting at LADWP's office in Keeler to introduce the project
CSLC	May 3, 2011	Letter of Non-objection provided for archaeological survey in the Phase 7a area.
CSLC	June 28, 2011	Revised letter of Non-objection received for archaeological survey in the Phase 7a area: DCA parcels T37-1, T37-2, T1A-3, T1A-4, T32-1, and water pipeline route between T37-1 and T37-2, plus a 1.7 mile linear alignment extending from Parcel T36 to T37-2, and approximately 18 miles of a 25-foot wide linear corridor, extending in transitional areas around various dust control areas, including the eastern sides of T28N, T28S, and T26; south and east side of T5-1; southeast side of T5-3; south side of T2-1; north side and portions of the east and west sides of T1A-3; north side and a portion of the west side of T1A-4; the entire perimeter of T37-2; and the north, west and south sides of T37-1.
CSLC	July 14, 2011	Submittal of Archaeological Permit Application by Garcia and Associates with supplemental information, including a research design, testing plan, and proof of curation agreements.
CSLC	July 28, 2011	Submittal of LADWP's Application for Lease of State Lands to CSLC
CSLC	August 26, 2011	Fieldwork Summary Report submitted for the Archaeological and Paleontological Survey for Phase 7a
CSLC	September 1, 2011	Letter of Non-objection for Phase II archaeological survey in the Phase 7a area
CSLC	January 23, 2012	Archaeological Phase II Testing and Evaluation Fieldwork Summary Report for the Owens Lake Dust Control Program in the Proposed Phase 7a Project Area, Owens Lake, Inyo County, California.
Kathy Bancroft - Lone Pine Paiute-Shoshone Tribe	February 9, 2012	Interview to obtain oral history information for the historic context section of the Phase 7a Phase II Archaeological Testing and Evaluation Report
GBUAPCD	March 28, 2012	Meeting at LADWP office to describe Phase 7a Phase II Archaeological Testing and Evaluation findings

Agency/Reviewer	Date	Description
Lone Pine Paiute-Shoshone Tribe	May 31, 2012	Submittal of Draft OLDMP – Phase 7a Phase II Archaeological Testing and Evaluation Report for comments
Lone Pine Paiute-Shoshone Tribe review	June 25, 2012	Comments
SHPO	August 16, 2012	Submittal of Final OLDMP – Phase 7a Phase II Archaeological Testing and Evaluation Report for concurrence
CSLC	August 20, 2012	Submittal of Final OLDMP – Phase 7a Phase II Archaeological Testing and Evaluation Report
Lone Pine Paiute-Shoshone Tribe	August 22, 2012	Submittal of Final OLDMP – Phase 7a Phase II Archaeological Testing and Evaluation Report

4.4.9 Significance Criteria

In accordance with Public Resources Code Sections 21083.2 and 21084.1 and Section 15064.5 and Appendix G of the State CEQA Guidelines, the proposed project would have a significant impact on cultural resources if it would:

- Cause a substantial adverse change in the significance of an historical resource as defined in Public Resources Code Sections 21083.2 and State CEQA Guidelines section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Public Resources Code Sections 21083.2 and State CEQA Guidelines section 15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

The CEQA Statute and Guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the NRHP, the CRHR, or local registers. CEQA further defines a “historical resource” as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR).
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- A resource identified as significant (e.g., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered “historically significant” if it meets the criteria for listing on the California Register of Historical Resources (CEQA Guidelines Section 15064.5).

Section 15064.5(b1) of the CEQA Guidelines defines a “substantial adverse change” as “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.”

4.4.10 Impacts

The following analysis considers impacts from installation of dust control on 3.1 square miles of the Phase 7a area and transition of 3.4 square miles of existing Shallow Flooding to a mix of BACM to conserve water (original Phase 7a Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see Section 5) which will reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. Since the Avoidance Alternative would result in less impacts than the original Phase 7a Project, the following analysis presents a worst-case impact assessment.

Construction activities for the Phase 7a project will include land leveling, grading and re-contouring; trenching for pipeline installation; earthwork for berm creation; and heavy equipment travel for installation of geotextile fabric, gravel, irrigation systems, and plant materials. These actions have the potential to dislodge, relocate, crush, and otherwise cause substantial adverse changes to unique cultural resources recommended as eligible under the CRHR, and therefore significant under CEQA.

4.4.10.1 Historic Resources

Known Historic Resources Determined to be CRHR-eligible. No known significant historic buildings and/or structures are present in the Phase 7a project area. No historic buildings and/or structures were recorded during the 2011 or 2012 pedestrian surveys of the DCAs, berm areas, or water supply pipeline alignments or the 2011/2012 Phase II investigation. Therefore, the proposed project will have no impact on known historic resources.

Presently Unidentified Historic Resources Found During Construction. Although the potential for identifying new historic sites is low, if previously unidentified historic buildings and/or structures are exposed during construction, they will require evaluation to determine if they are CRHR-eligible historical resources.

Any construction related ground disturbances to historic buildings or structures determined to be CRHR-eligible resources would be a substantial adverse change, and therefore, a significant impact. Further, construction activities and heavy vehicle transportation could inadvertently damage intact portions of historic resources adjacent to the various Phase 7a project areas. Therefore, the impact of the proposed project on presently unidentified historic resources is significant. Mitigation Measure CR-2 has been defined to reduce impacts on presently unidentified historic resources to below a level of significance.

4.4.10.2 Archaeological Resources

Known Sites Determined to be CRHR-eligible. The 11 CRHR-eligible resources identified in the project area (**Table 4.4-7**) are located on parcels that will be subject to grading, land leveling, and heavy equipment travel. One site will be avoided by realignment of the proposed water supply pipeline. For the other sites, construction-related ground disturbances are likely to fracture, crush, demolish, and/or relocate cultural materials present in these sites. This would adversely alter archaeological resources determined to be CRHR-eligible, and adversely alter their immediate surroundings, such that the significance of the historical resource would be materially impaired.

One more site, CA-INY-6660, within one of the Transition Areas, was previously evaluated and recommended eligible for the CRHR. Mitigation Measure CR-3 has been defined to reduce impacts related to this site below a level of significance.

Known Sites Unevaluated for CRHR-eligibility. Two archaeological sites within the Phase 7a DCAs remain unevaluated; 7A-117 was discovered in one of the Transition Areas during geotechnical monitoring and CA-INY-8918 was recorded during the archaeological survey of T12-1, but avoided during tillage work in 2012. Mitigation Measure CR-3 has been defined to reduce impacts related to these sites below a level of significance.

Based on initial survey, additional sites are known but have not been evaluated along the access roadway alignment. As of January 2013, the Phase I survey of this area is on-going. Any destruction of significant archaeological materials during improvement of the access roadway would be a substantial adverse change. Mitigation Measure CR-4 has been defined to reduce impacts on unevaluated cultural resources sites known for the access roadway to below a level of significance.

Presently Unidentified Archaeological Resources Found During Construction. High winds and shifting sands are responsible for both exposing and concealing archaeological resources at Owens Lake, so previously unidentified archaeological resources will likely be impacted during construction. Any destruction of previously unidentified archaeological resources resulting from Phase 7a construction would be a substantial adverse change. Mitigation Measure CR-2 has been defined to reduce impacts on presently unidentified archaeological resources to below a level of significance.

Mitigation Measures CR-1, CR-2, CR-3 and CR-4 will reduce impacts on three known cultural resources sites, sites adjacent to the Phase 7a construction areas, sites along the access roadway and sites that are presently unknown. However, mitigation for impacts to the 10 CRHR-eligible resources identified in the Phase 7a DCAs has not been identified. Therefore, the overall impact of the proposed project on archaeological resources is significant after incorporation of feasible mitigation.

4.4.10.3 Paleontological Resources

Known paleontologically sensitive parcels in the Phase 7a area are T30-1, as documented during construction monitoring for Phase 5 Jones & Stokes 2008),T21, T17-1, T17-2, T16, T9, T5-1, T1A-1, and T1A-2_a, as identified during construction monitoring for Phase 7 (Garcia and Associates, 2010a), and the northern portion of T37-1 during Phase 8 construction monitoring (Garcia and Associates, 2012c). Parcels along the regulatory shoreline have produced some of the most significant fossils to date. However, shallow ground disturbances on the lake can yield fossils from fish, plants, and birds; whereas deeper deposits have discovered volcanic ash deposits. During the Phase 7a project, fossils were identified in certain DCAs, and within two of the Pipeline Options. Since the Phase 7a project includes earthwork in three DCAs with previous fossil finds, and since the other projects area are likely to yield paleontological resources, the project has the potential to directly destroy unevaluated, but potentially unique, paleontological resources or sites. Therefore, the impact of the proposed project on paleontological resources is significant. Mitigation Measure CR-6 has been defined to reduce impacts on paleontological resources to below a level of significance.

4.4.10.4 Human Remains

Presently, no known recorded cemeteries or Native American burial sites have been identified in the Phase 7a project area. However, human remains are known for areas on Owens Lake (Halford and Carpenter, 2005). Tribal representatives have emphasized their concerns about the potential for burials near the Phase 7a areas (K. Bancroft, pers. comm., December 14, 2012). Therefore, the potential exists for the unanticipated discovery and disturbance of human remains during construction of Phase 7a. Therefore, the impact of the proposed project on human remains is significant. Mitigation Measure CR-5 has been defined to reduce impacts on human remains to below a level of significance.

4.4.11 Mitigation Measures

As noted in CEQA Guidelines Appendix K, "in-situ preservation of a site is the preferred manner of avoiding damage to archaeological resources. Preserving the site is more important than preserving the artifacts alone because the relationship of the artifacts to each other in the site provides valuable information that can be lost when the artifacts are removed. Further, preserving the site keeps it available for more sophisticated future research methods. Preservation may also avoid conflict with religious or cultural values of groups associated with the site." Avoidance of the cultural resources known for the Phase 7a project area by redefining project boundaries is evaluated in **Section 5**, Alternatives. Site avoidance and in-situ preservation is supported by local tribes. The Lone Pine Paiute-Shoshone representatives have been very vocal with regard to the prior destruction of numerous archaeological sites at and near Owens Lake, which they feel diminishes the material aspects of their culture and heritage. They are particularly concerned about the cumulative effects resulting from the continuing destruction of their traditional hunting and gathering areas, and settlements. They are worried that history is being erased before their eyes and without the natural features and landmarks that mark events and locations important to them as a people, their stories will be lost.

4.4.11.1 Mitigation Measures Reviewed and Considered

Site Capping. Site capping is a mitigation measure used to protect archaeological sites through burial below culturally-sterile sand or soil. This method can be used to protect small-to-medium-sized archaeological sites, which generally encompass between 1 and 50 square meters, prior to building on the sites. Site capping entails placing a layer of soil (with a color which contrasts with the native soil) between the archaeological site and fill material. In some cases, a layer of filter fabric or textile cloth is used to prevent soil mixing. Compacted clays or clay-gravels are not recommended as a protective matrix. Installation of the soil cap would be monitored by an archaeologist and permanent benchmarks would mark the boundaries of the buried site. Soil capping is a beneficial mitigation technique since it protects a site from looting and vandalism, construction and development projects, and from natural processes, such as wind, rain, and erosion (Thorne, 1991). For the Phase 7a project, capping with a geotextile and either soil or Gravel Cover was considered.

The size of the known significant cultural resources sites in the Phase 7a project areas ranges from 0.1 to over 150 acres. Soil caps are installed using heavy construction equipment including dump trucks. Soils can also be placed with hand tools from a central stockpile, but delivery of the soils to the stockpile requires truck travel. Gravel Cover installation would be as described for the proposed project (**Section 3**). A feasible method to install a soil (or gravel) cap over a large site without driving over the site repeatedly has not been identified. Truck trips through a cultural site would be anticipated to crush, destroy and dislodge cultural materials. Additionally, land leveling was required during installation of the geotextile fabric in the Phase 8 area to maintain the integrity of the geotextile fabric over large areas. It is therefore assumed that some leveling would be required for Phase 7a cultural resources areas, which would result in additional soil disruption and artifact destruction. Site capping would therefore preserve some of the resources contained at the site, but would destroy others. Overall, construction activity necessary to install a soil cap would cause a substantial adverse change in the significance of CRHR-eligible resources. Therefore, soil capping for protection of cultural resources in the Phase 7a project area is not considered further.

Phase III Data Recovery Investigations. CEQA Section 21083.2(d) limits excavation as mitigation to those parts of a unique archaeological resource that would be damaged or destroyed by a project. Since Phase II evaluation of the cultural resources in the Phase 7a project area did not adequately recover the scientifically consequential information from and about the resources, a Phase III data recovery investigation for the portion of the 11 CRHR-eligible sites that would be disturbed by project construction was considered.

A Phase III data recovery program would include:

- Development of a comprehensive research design and testing plan to answer questions addressed during the Phase II survey on a broader regional level and to provide a procedural framework for the collection of data at sites determined to be significant
- Mapping and systematic collection of surface artifacts, possibly complete data recovery depending on site size

- Subsurface investigation through methods, such as controlled hand-excavation units, deep testing, or a combination of such methods. When applicable, other techniques, such as geophysical testing methods may also be used.
- Samples that might include charcoal, flotation, phytolith, pollen, and soil or other types, will be gathered, as applicable, and processed and analyzed by specialists
- Analysis of recovered material through visual inspection, lithic micro-wear analysis, obsidian hydration, and other chemical analyses when applicable
- Preparation of a report
- Transmittal of report to involved parties and the Eastern Information Center at the University of California, Riverside
- Curation of artifact collection (subject to approval by CSLC)

Mitigation of CRHR-eligible sites through Phase III data recovery excavations is not recommended for the Phase 7a project because of the tremendous importance of these sites to both the archaeological and local Native American communities for their prehistoric and historic value as unique historical resources. Site conditions and previous construction projects at Owens Lake have cumulatively impacted other archaeological sites and thereby reduced the available cultural resources information on the lake as a whole. Owens Lake was the ancestral home of Paiute-Shoshone Native Americans currently living on the Lone Pine Reservation, and construction impacts to the 11 CRHR-eligible sites in the Phase 7a project area would eradicate some of the final physical vestiges of their heritage. Lone Pine Paiute-Shoshone tribal representatives have voiced their dismay with the irreverent way remnants of their ancestor's way of life have been stripped away by construction, without regard for Native American traditions and ideological values. In addition to the destruction of former human settlements, they believe that natural features and landmarks, which mark events and locations that are important elements of their storytelling of past events and other aspects of their culture, passed on from generation to generation, are being hastily eradicated. Therefore, a Phase III data recovery program is not considered feasible mitigation for impacts to significant cultural resources located on approximately 350 acres of the original Phase 7a project areas.

4.4.11.2 Mitigation Measures to be Incorporated as part of the Phase 7a Project

The following mitigation measures shall be implemented to protect cultural resources from disturbance:

CR-1. Avoidance of resources immediately adjacent to the Phase 7a Project Area to the extent feasible – using a 100-foot buffer around archaeological sites

Construction activities and heavy vehicle travel could inadvertently damage intact portions of cultural resources adjacent to the various Phase 7a project areas. A qualified archaeologist shall prepare maps depicting archaeological sites with a 100-foot buffer as environmentally sensitive areas. These maps shall be available for cultural resources monitors and construction crews to use during all construction activities and vehicle transportation through the Phase 7a Project Area.

CR-2. Cultural Resources Construction Monitoring Program

Impacts to surface and subsurface cultural resources not previously identified shall be mitigated through preparation of a cultural resources monitoring plan and its implementation during construction or other ground-disturbing activities. The Cultural Resources Construction Monitoring Program shall include:

- The retention of a qualified archaeologist to implement a monitoring and recovery program. A "qualified archaeolologist" should meet the U. S. Secretary of the Interior's Historic Preservation Professional Qualification Standards for Archaeology. The qualifications of the archaeologist shall be submitted to the responsible agency (CSLC) for approval.
- The Lone Pine Paiute-Shoshone tribe shall be contacted prior to the start of project construction. Qualified Lone Pine Paiute-Shoshone cultural resources monitors shall be afforded an opportunity to be present during earthwork and excavation activities associated with construction of the Phase 7a project.
- The qualified archaeologist shall be required to secure a written agreement with a recognized museum repository, such as the University of California, Riverside, regarding the final disposition and permanent storage and maintenance of any unique archaeological resources or historical resources recovered as a result of the archaeological monitoring, as well as corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage.
- LADWP shall require the qualified archaeologist to provide cultural resources awareness training prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique archaeological resource, historical resource, or human remains are encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified archaeologist will also prepare and distribute informative Fact Sheets regarding archaeological and Native American sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the archaeologist, including a telephone number where they can be reached by the construction contractor, as necessary.
- The qualified archaeologist shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in T1A-3, T1A-4, T32-1, T37-1, and T37-2, as well as in the Phase 8 project area for installation of the water supply pipeline to T37-2. Monitors will move among construction locations as directed by the cultural resources manager and in consultation with the Construction Contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils will not require monitoring. DCA parcel T12-1 and the Transition Areas (T1A-2_a, T28N, T28S, T30-1, T36-1_b, T35-1, and T35-2) were previously disturbed for prior phases of the dust control project. In those areas, it will be up to the discretion of the archaeological monitor, to determine which areas will require monitoring and how frequently. The archaeologist shall coordinate with the construction manager to divert work around the discovery of any potentially significant archaeological resource, if any

are encountered. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP and the qualified archaeologist.

- If construction personnel discover a cultural resource in the absence of an archaeological monitor, construction shall be halted within 100 feet of the find, and a qualified archaeologist shall be contacted to make an immediate evaluation of significance and recommend appropriate treatment of the resource. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP and the qualified archaeologist.
- The qualified archaeologist shall ensure that all construction personnel shall be informed of the requirements to notify the Inyo County coroner within 24 hours of the discovery of human remains on state lands (as required by Public Resources Code 5097).
- The qualified archaeologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including tribal representatives, and the results of monitoring, including the recovery of archaeological resources, sketches of recovered materials, and associated geographic site data. Within 120 days of the completion of the archaeological monitoring, a monitoring report shall be submitted to LADWP, CSLC, and to the Eastern Information Center at the University of California, Riverside. The report, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to unique archaeological resources or historical resources.

CR-3. Avoidance of Unevaluated and Other Resources

A qualified archaeologist shall prepare maps delineating archaeological sites 7A-117 and CA-INY-6660 and CA-INY-8918 plus a 100-foot buffer around each of the sites. No earthwork or vehicle travel shall occur in these sites or the buffer areas during Phase 7a construction or maintenance activities. Construction activities in the vicinity of these sites shall be monitored by an archaeological monitor.

CR-4. Unevaluated Resources on the Access Roadway

A qualified archaeologist shall compare the work area map for the access roadway with the locations of known cultural resources. Cultural resources sites that overlap with the work area map that cannot be avoided shall be evaluated as part of a Phase II archaeological investigation prior to ground disturbances in the area (CEQA Sections 21083.1 and 21083.2). If determined to qualify as CRHR-eligible sites, the roadway shall be re-designed to avoid the resources to the maximum extent feasible. The Lone Pine Paiute-Shoshone tribe shall be consulted during the re-design process. Where re-design is infeasible, a Phase III data recovery investigation, or other appropriate measures, for the portions of any CRHR-eligible sites that would be disturbed by roadway improvement shall be conducted (CEQA Section 21083.2).

Relevant archaeological investigation and/or excavation permits shall be obtained from the California State Lands Commission prior to the start of Phase II and/or Phase III work. The Lone Pine Paiute-Shoshone tribe shall be contacted prior to implementation of Phase II and/or Phase III work and qualified tribal monitors shall be afforded an opportunity to be present during cultural resources investigations for the access roadway.

CR-5. Unanticipated Discovery of Human Remains on State Lands

Upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any areas that are reasonably suspected to overlie adjacent human remains until the following conditions are met:

- The Inyo County Coroner has been informed and has determined that no investigation of the cause of death is required.
- If the remains are of Native American origin, the Native American Heritage Commission (NAHC) will be contacted. In consultation with the Most Likely Descendant, the NAHC and qualified archaeologist shall determine the treatment and disposition of the human remains and any associated grave goods, with appropriate dignity, as provided in Public Resources Code Section 5097.98.
- If the remains are not of Native American origin, the Inyo County Coroner will make a determination as to the disposition of the remains.

Ground-disturbing activities may continue once compliance with all relevant sections of the California Health and Safety Code have been addressed and authorization to proceed issued by the Inyo County Coroner, LADWP, and the qualified archaeologist.

CR-6. Paleontological Resources Construction Monitoring Program

Impacts to surface and subsurface paleontological resources not previously identified shall be mitigated through preparation of a written paleontological monitoring plan to be implemented during construction ground-disturbances, including trenching, grading, and other earth-moving activities. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. LADWP shall require that construction monitoring, salvage, and recovery of unique paleontological resources is consistent with standards for such recovery established by the Society of Vertebrate Paleontology (SVP). The Paleontological Resources Construction Monitoring Program shall include:

- LADWP shall retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work. A "qualified paleontologist" is defined as a practicing scientist who meets the qualifications established by the SVP. The qualifications of the paleontologist shall be submitted to the responsible agency (CSLC) for approval.

- The qualified paleontologist shall be required to secure a written agreement with a recognized repository, regarding the final disposition, permanent storage, and maintenance of any significant fossil remains and associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. In addition, a technical report shall be completed. The final disposition of paleontological resources recovered on State lands must be approved by the CSLC.

- The paleontological monitor may be a qualified paleontologist or a cross-trained archaeologist or geologist working under the supervision of a qualified principal paleontologist. The function of the monitor is to identify potential resources and recover them with appropriate scientific data.

- LADWP shall require the qualified paleontologist to provide a paleontological resources briefing prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique paleontological resource is encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified paleontologist will also prepare and distribute informative Fact Sheets regarding paleontological sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the paleontologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The paleontological monitor shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in the Phase 7a project area. Monitors will move among construction locations as directed by the project cultural resources manager and in consultation with the Construction Contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. The monitor shall coordinate with the construction manager to divert work around potentially significant paleontological resources, if any are encountered. Prior to the resumption of ground-disturbing activities in the immediate vicinity of the paleontological resources, LADWP shall provide the monitor with the necessary resources to identify and implement a program for the appropriate disposition.

- Discovery of fossil-producing localities shall require that stratigraphic columns be measured and that geologic samples be taken for analysis.

- If fossil localities are discovered, the paleontologist shall collect controlled samples for processing. All fossils recovered shall be prepared, identified, and cataloged before donation to the accredited repository designated by the lead agency.

- In conjunction with the subsurface work, the paleontological monitor shall inspect exposed sediments, including microscopic examination of matrix, to determine if fossils are present. In addition, the qualified paleontologist shall be available on call to respond to unanticipated discoveries.

- If construction personnel discover a paleontological resource in the absence of a paleontological monitor, construction shall be halted and a qualified paleontologist shall be contacted to make an immediate evaluation of significance and recommend appropriate treatment of the resource. If the material is determined to be significant, the qualified paleontologist shall prepare and implement a treatment plan in consultation with LADWP. Construction activity shall not resume until authorization has been provided by LADWP and the qualified paleontologist.

- The qualified paleontologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including the tribal representative, and the results of monitoring, including the recovery of paleontological resources, sketches of recovered materials, and associated geographic site data. Within 120 days of the completion of the paleontological monitoring, a final mitigation report shall be submitted to LADWP, and CSLC with an appended, itemized inventory of the specimens observed and collected. The report should include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and any technical or specialist's reports as appendices. The report and inventory, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to paleontological resources.

4.4.1 Impact Significance After Implementation of Mitigation Measures

Construction of the original Phase 7a project would significantly impact CRHR-eligible cultural resources located in the Phase 7a project areas. As described above, implementation of a Phase III data recovery program for the significant cultural resources sites located in the Phase 7a DCAs is not identified as feasible mitigation for the project. Implementation of mitigation measures CR-1 to CR-6 would protect three of the known archaeological sites as well as unevaluated and inadvertently discovered cultural resources, but the portions of the CRHR-eligible sites that overlap with project construction areas in DCAs would still be significantly adversely impacted. Therefore, the impact on cultural resources after incorporation of feasible mitigation is significant.

As a result of the cultural resource analysis, LADWP has identified an environmentally superior alternative (Avoidance Alternative, **Section 5**) that excludes approximately 350 acres from the original 3.1 square mile Phase 7a area in order to reduce impacts to significant cultural resources.

Section 4.5
Hydrology and Water Quality

4.5 HYDROLOGY AND WATER QUALITY

Based on the information presented in the Initial Study for the Phase 7a project (**Appendix A**), LADWP determined that the project would not have the potential to significantly impact the hydrology or water quality of Owens Lake. However, comment letters received from the Regional Board and from CSLC (**Appendix B**) raised additional issues regarding toxics from gravel leaching, alteration of drainage patterns and cumulative impacts. In their NOP comment letter, CSLC raised an issue regarding large-scale use of the geotextile and gravel and impacts on underlying soils. This section addresses these comments and also includes additional information on the geotextile fabric proposed for use in the Gravel Cover areas. To address these issues, Hydrology and Water Quality sections have been carried forward for additional review in this EIR.

4.5.1 Regulatory Framework

Beneficial uses and water quality objectives are specified in the Water Quality Control Plan for the Lahontan Region (Basin Plan) prepared by the Lahontan Regional Water Quality Control Board (Regional Board, 2005). Beneficial uses are designated for Owens Lake and Owens Lake wetlands as shown in **Table 4.5-1**.

Table 4.5-1
Beneficial Uses of Owens Lake

Surface Water	MUN	AGR	GWR	REC-1	REC-2	COMM	WARM	COLD	SAL	WILD	WQE	FLD
Owens Lake				X	X	X	X	X	X	X		
Owens Lake Wetlands	X	X	X	X	X		X	X		X	X	X

MUN – municipal and domestic supply; AGR – agricultural supply; GWR – groundwater recharge, REC-1 – water contact recreation; REC-2 – noncontact water recreation; COMM – commercial and sportfishing; WARM – warm freshwater habitat; COLD – cold freshwater habitat, SAL – inland saline water habitat; WILD – wildlife habitat, WQE – water quality enhancement; FLD - flood peak attenuation/flood water storage.
Source: Regional Board, 2005.

Waterbody-specific numeric objectives for the protection of these beneficial uses are not defined in the Basin Plan for Owens Lake. However, narrative and numeric water quality standards applicable to all surface waters (including wetlands) in the region are specified for: ammonia, coliform bacteria, biostimulatory substances, chemical constituents, total residual chlorine, color, dissolved oxygen, floating materials, oil and grease, non-degradation of aquatic communities and populations, pesticides, pH, radioactivity, sediment, settleable materials, suspended materials, taste and odor, temperature, toxicity, and turbidity.

Water associated with operation of the proposed project would be from the Los Angeles Aqueduct (LAA) or Lower Owens River. The quality of these sources would not violate applicable narrative or numeric water quality standards. The existing DCAs are operated under Board Order No. R6V-2006-0036, Revised Waste Discharge Requirements (WDRs) for the Southern Zones dust control project. Monitoring is conducted and reported semi-annually; the existing dust control project is in compliance with the adopted WDRs. The Regional Board has determined that implementation of the Phase 7a project does not warrant a revision or amendment to the existing WDR (J. Zimmerman, P.G., Regional Board, pers. comm., 2011). Implementation and operation of the Phase 7a project will be done in conformance with the existing permit.

4.5.2 Environmental Setting

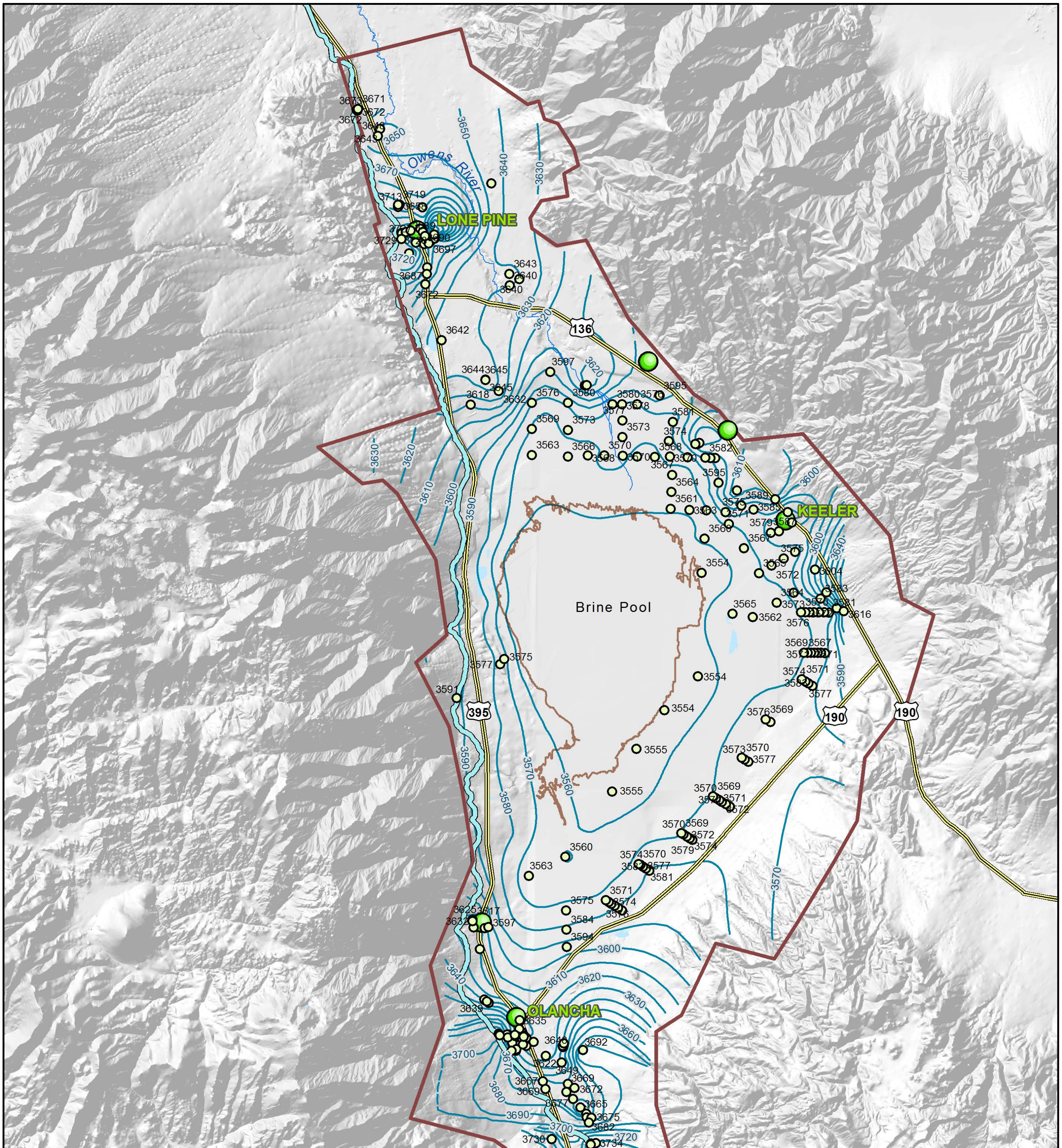
The floor of the Owens Valley ranges in elevation from a low of approximately 3,550 feet above mean sea level (MSL) on the Owens dry lake bed to the south to approximately 4,100 feet above MSL near Bishop to the north. The bed of Owens Lake is relatively flat with only 50 feet of topographic relief from the historic shore to the lowest portion of the lake bed. The lake bed can be divided into two main areas: the brine pool (below an elevation of 3,553.53 MSL) and the playa (the area between the brine pool and the regulatory shoreline at 3,600 MSL). The regulatory shoreline is used for analysis, but does not reflect the actual Owens Lake shoreline absent LADWP water gathering activities. The playa generally consists of lacustrine and alluvial sediments ranging in size from fine gravels to clays and containing a high salt content. The brine pool is the remnant portion of the historic Owens Lake and contains a high accumulation of mineral salts. The brine pool is generally wet during part of the year, depending on the amount of precipitation and runoff from the surrounding mountains.

Surface runoff occurs from creeks and small intermountain watersheds emanating from precipitation on the Sierra Nevada and adjacent foothills. Some surface flows from the major creeks are captured by the LAA and exported to the City of Los Angeles. Runoff not intercepted by the LAA flows toward the Owens Lake bed. Under normal conditions, these creek beds and washes are dry; however, surface flow may occur during periods of extremely high runoff or flash floods. As part of the Lower Owens River Project (LORP), minimum Owens River flows are releases from the LORP pump station (approximately 6 to 9 cfs on an annual average basis; minimum releases at any time are approximately 3 cfs) for discharge to the Owens River Delta and, depending on conditions, to an area of the lake known as the brine pool transition area. In addition, portions of the LORP seasonal habitat flows (up to approximately 200 cfs ramped up and down over approximately 14 days) are bypassed at the pump station and released towards the Owens River Delta.

Groundwater occurs in multiple aquifers beneath the lake bed surface. A discontinuous surficial aquifer is present on portions of the Owens Lake playa and delta area (MWH, 2011a). Since 1992, GBUAPCD monitored an extensive network of shallow piezometers in the lake bed with depths of 4, 10 and 30 ft. This monitoring activity has recently been transferred to the LADWP. Groundwater level monitoring data indicate groundwater occurs at depths ranging from less than

2, to 15 feet below ground surface (ft bgs) (GBUAPCD, 2009). Shallow groundwater generally flows toward the brine pool as shown in **Figure 4.5-1**, where it becomes an evaporative sink. A deeper aquifer system consists of up to five permeable zones (aquifers) at depths ranging from 65 to more than 1,500 ft bgs (MWH, 2011b). Monitoring data suggest that the water levels in these deep aquifers range from over 100 feet around the margins of the lake to a pressure of more than 60 ft above ground surface on the lake bed (MWH, 2011b).

On August 4, 2009, the LADWP Board of Water and Power Commissioners, which manages all water resources and facilities for the City of Los Angeles, passed a resolution requiring LADWP to implement water conservation measures on Owens Lake to reduce Los Angeles Aqueduct diversions for existing and future Owens Lake dust control projects to below 95,000 afy. The 2010 Urban Water Management Plan does not allocate any further water for Owens Lake mitigation. Thus, any additional water needed for dust control on Owens Lake above and beyond the allocated 95,000 afy needs to be offset from some other source besides the Los Angeles Aqueduct. The Phase 7a project will transition existing dust control from Shallow Flooding to Managed Vegetation and Gravel Cover in order to make available the necessary water supply for new dust controls in Phase 7a areas.



Note:
"Shallow" contours are based on data from wells that are screened less than 100 feet below the water table, and include the GBUAPCD 4-foot piezometers. Where data was available, elevations were selected on or about February 1, 2000. Where data was not available on this date, data closest to this date was selected. If it is the only data available, data from well driller logs was used regardless of date. Not corrected for density differences due to salinity.

Key to Features

- 3560 Well and Locations with Groundwater Elevation
- Groundwater Elevation (FMSL)
- Contour interval = 10 feet
- Highways
- Los Angeles Aqueduct
- Owens River
- OLGEP Study Area
- Other Water Bodies
- Owens Lake (Historic Shoreline)

N 0 2 4 Miles

Document: \\Uspas1netapp1\muni\Clients\Los Angeles Water&Power LADWP\Owens Valley Data\Owens Valley GIS\Projects\OLGEP\2000SHALLOWContours.mxd

Conceptual Model for Owens Lake Groundwater Evaluation Project

Shallow Groundwater Elevations

Los Angeles Department of Water & Power

Figure 4.5-1

MWH

This map has been designed to print 8.5" x 11".

4.5.3 Significance Criteria

The proposed project would have a significant impact on hydrology and/or water quality if it (State CEQA Guidelines, Appendix G):

- Violated any water quality standards or waste discharge requirements.
- Substantially altered the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially altered the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

4.5.4 Impacts

The following analysis considers impacts from installation of dust control on 3.1 square miles of the Phase 7a area and transition of 3.4 square miles of existing Shallow Flooding to a mix of BACM to conserve water (original Phase 7a Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see **Section 5**) which will reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. Since the Avoidance Alternative would result in less impacts than the original Phase 7a Project, the following analysis presents a worst-case impact assessment.

4.5.4.1 Water Quality Impacts During Construction

During project construction, disturbance to surface soils will result from land leveling, raised roadway construction, irrigation system installation, and preparation of gravel stockpile locations. Because site disturbance would exceed 1 acre during construction, stormwater will be managed in accordance with BMPs identified in a SWPPP completed in compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit). As summarized in **Table 4.5-2**, the specific BMPs to be implemented are anticipated to be similar to those used during construction of the Phase 7 dust control measures.

Table 4.5-2
Summary of Anticipated Stormwater BMPs for Phase 7a

Best Management Practices for the Protection of Stormwater Quality During Construction
<u>Housekeeping Measures</u> • Conduct an inventory of products used or expected to be used • Cover and/or berm loose stockpiled construction materials • Store chemicals in watertight containers
<u>Employee Training</u> • Brief staff on the importance of preventing stormwater pollution • Have staff review SWPPP • Conduct refresher training during the wet season • Document training
<u>Erosion and Sediment Controls</u> • Provide effective cover for inactive areas – cover, berm, or direct runoff to suitable basins • Establish and maintain effective perimeter control • Stabilize construction entrances and exits to control sediment – inspect ingress and egress points daily, and maintain as necessary • Control dust during earthwork • Place sandbags or other barriers to direct stormwater flow to suitable basins
<u>Spill Prevention and Control</u> • Inspect construction equipment for leaking • Use drip pans until equipment can be repaired • Cleanup spills Immediately – remove adsorbent promptly • Notify the proper entities in the event of a spill
<u>Concrete Truck Washing Waste</u> • Provide containment for capture of wash water • Maintain containment area
<u>Hazardous Waters Management and Disposal</u> • Store hazardous wastes in covered, labeled containers with secondary containment for liquid hazardous wastes • Store wastes separately to promote recycling and to prevent undesirable chemical reactions
<u>Materials Handling and Storage</u> • Establish a designated area for hazardous materials • Berm, cover, and/or contain the storage area as necessary to prevent materials from leaking or spilling • Store the minimum volume of hazardous materials necessary for the work
<u>Vehicle and Equipment Maintenance, Repair, and Storage</u> • Inspect vehicles and equipment regularly • Conduct maintenance as necessary • Designate areas for storage – where fluids can be captured and disposed of properly
<u>Scheduling</u> • Avoid work during storm events • Stabilize work areas prior to predicted storm events

With implementation of the required SWPPP, potential increases of sediment load in stormwater will not adversely affect surface water. Therefore, the impact on water quality during project construction will be less than significant.

4.5.5 Water Quality Impacts from Chemical Use

Construction of the proposed project will require the routine transport, use, and storage of limited quantities of gasoline and diesel fuel, and potentially degreasers and solvents for construction vehicle maintenance. The existing LADWP Sulfate Facility is located off Sulfate Road west of SR 136 on the east side of the lake. This facility includes a vehicle wash station, refueling station, and fuel tanks as well as areas for vehicle maintenance. Additionally, the two vehicle and equipment staging areas previously used (for Phases 7 and 8) will be used for Phase 7a. These previously-disturbed sites are located near the intersection of Main Line Road and Corridor 1 at the north end of the lake (20 acre site) and at the southern end of the lake adjacent to Dirty Socks Access Road (2.7 acre site). In addition to office trailers and equipment and vehicle storage, these areas will have fueling stations for gas and diesel. Fuel trucks will be used to refuel construction equipment (including the low ground pressure gravel trucks) and the long haul gravel trucks; no vehicle fuels or oils will be stored in the gravel stockpile areas. Additional permanent fertilizer storage for the proposed Managed Vegetation areas is not proposed under Phase 7a. Concrete pads (with containment) will be constructed in T1A-2a, T28N/28S, T30-1, T37-1b and T37-2 for use by portable fertilizer delivery tanks. Periodic fertilizer delivery would be by flatbed or pickup truck. Other chemical use is not anticipated.

During construction, implementation of the BMPs related to handling of hazardous materials (**Table 4.5-2**) will be implemented to limit the potential for accidental release of fuels and degreasers or solvents to stormwater. During operation of the Phase 7a project, LADWP will employ standard operating procedures (SOPs) for the routine transport, use, storage, handling, and disposal of hazardous materials related to operation of the DCMs. These SOPs include:

- Routine inspection and maintenance of fertilizer storage facilities and secondary containment
- Specification of how fuel and fertilizer are transported within the lake bed
- Designation of acceptable refueling locations; designation of equipment parking, storage, and maintenance areas at Keeler Yard; routine inspection and maintenance of vehicles and equipment
- Adherence to the Keeler Yard Spill Prevention and Response Plan
- Employee training

LADWP also prepares an annual update on the transport, use, storage, handling, and disposal of hazardous materials. Therefore, with adherence to the SOPs for hazardous materials use, impacts related to release or accidental exposure to humans or the environment, including impacts on water quality, will be less than significant.

4.5.5.1 Water Quality and Soils Impacts of Gravel Cover

Gravel cover is proposed to be applied to the following DCAs:

- T1A-3 and approximately 70 percent of T37-1
- T35-1 and T35-2 (conversion from existing Shallow Flooding to Gravel Cover)
- T28N and T28S (two of the Transition Areas where approximately 20 percent of the DCA will be converted to Gravel Cover as part of BACM Hybrid)

Gravel sources were previously evaluated as part of GBUAPCD's Final EIR for the Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (July 1997). The composition and structure of the rock from each gravel source (which included the Keeler Fan and the Dolomite site) were considered to be such that the gravel produced would not deteriorate during the life of the project. Samples were collected for chemical analysis to determine the concentrations of metals produced during chemical weathering. Samples were crushed to pass a 200-mesh sieve (0.003 inch) and then synthetically leached. Results of the testing were intended to provide a long-term estimate of the soluble metals concentration that could be released from the gravel. For the most part, metals content of the Owens Lake salt crusts was found to be several orders of magnitude greater than that observed in the leachate from the gravel (**Table 4.5-3** and **4.5-4** [Tables 5.1 and 5.2 in GBUAPCD, 1997]).

Leachate from the gravel was not predicted by GBUAPCD to significantly increase the concentration of metals in the brine pool. These metals include those listed in Title 22 as being potentially toxic in the brine pool or the brine pool precipitate. For the Phase 7a project, gravel of a minimum hardness will be used to minimize mechanical breakdown of the material during delivery to the site and when it is being mechanically spread onto the DCA. Hardness is tested as resistance to degradation using the Los Angeles testing machine (ASTM C131 or C535). As part of preliminary design, two samples from the F.W. Aggregate Dolomite mine and two samples from the LADWP shale pit were tested for resistance to physical degradation. The test measures the degradation of mineral aggregates resulting from a combination of actions including abrasion, impact, and grinding. The tests indicated 23 percent wear for the dolomite and 36 percent for the shale. These tests indicate that the proposed gravel is more durable than the acceptable standard of 45 percent for stones proposed for use as riprap (Standard Specifications for Public Works Construction).

Table 4.5-3
Metals Analysis of Salt Crust Samples Collected from Owens Lake Playa

Element	Brine Pool Crust (mg/kg)	Sandpiper Lake Crust (mg/kg)	Sulfate Pond Crust (mg/kg)	Composite Sample (mg/kg)	Average[a] (mg/kg)	TTLC (mg/kg)
Antimony (Sb)	<0.5	<0.5	<0.5	<0.5		500
Arsenic (As)	8.7	82	26	36	38.2	500
Barium (Ba)	1.0	100	99	15	53.8	10,000[b]
Beryllium (Be)	<0.5	<0.5	<0.5	<0.5		75
Cadmium (Cd)	<0.5	<0.5	<0.5	<0.5		100
Chromium (Cr)	<0.5	2.8	2.4	0.8	2.0	500
Silver (Ag)	<0.5	<0.5	<0.5	<0.5		500
Cobalt (Co)	<0.5	1.9	1.7	0.5	1.4	8,000
Copper (Cu)	0.8	5.3	5.1	1.6	3.2	2,500
Lead (Pb)	<0.5	4.7	3.9	<0.5	4.3	1,000
Mercury (Hg)	<0.1	<0.1	0.18	<0.1		20
Molybdenum (Mo)	<0.5	6.5	4.2	1.1	3.9	3,500
Nickel (Ni)	<0.5	7.4	6.8	1.5	5.2	2,000
Selenium (Se)	0.6	<0.5	<0.5	0.6	0.6	100
Thallium (Th)	<0.5	<0.5	<0.5	<0.5		700
Vanadium (Va)	<0.5	18	19	5.1	14.0	2,400
Zinc (Zn)	<5	16	12	7	11.7	5,000

Source: GBUAPCD, 1997 (Table 5.1; analysis conducted by Sierra Environmental Monitoring, Inc.)
Notes: TTLC = total threshold limit concentration (22 CCR 66261.24)
[a] Average only given for elements with two or more samples above the laboratory limits of detection.
[b] Excluding barite or barium sulfate

Table 4.5-4
Analysis of Leachate from Potential Gravel Sources

Element	Basalt Flow Site	Keller Fan Site	Dolomite Site	STLC (mg/L)
Antimony (Sb)	0.001	<0.001	<0.001	15
Arsenic (As)	<0.001	0.013	<0.001	5.0
Barium (Ba)	0.25	0.17	0.18	100[a]
Beryllium (Be)	<0.001	<0.001	<0.001	0.75
Cadmium (Cd)	<0.001	<0.001	<0.001	1.0
Chromium (Cr)	<0.001	<0.001	<0.001	5
Silver (Ag)	<0.001	<0.001	<0.001	5
Cobalt (Co)	<0.001	<0.001	<0.001	80
Copper (Cu)	0.003	0.004	0.004	25
Lead (Pb)	0.004	0.001	<0.001	5.0
Mercury (Hg)	<0.0005	<0.0005	<0.0005	0.2
Molybdenum (Mo)	0.002	0.005	<0.001	350
Nickel (Ni)	0.002	0.003	0.002	20
Selenium (Se)	<0.001	<0.001	<0.001	1.0
Thallium (Th)	<0.001	<0.001	<0.001	7.0
Vanadium (Va)	0.002	0.008	<0.001	24
Zinc (Zn)	0.06	0.05	0.05	250

Source: GBUAPCD, 1997 (Table 5.2; analysis conducted by Sierra Environmental Monitoring, Inc.)
Notes: STLC = soluble threshold limit concentration (22 CCR 66261.24)
Leachate of source materials samples conducted by synthetic precipitation leachate procedure (SPLP) (EPA Standard Methods – SW846).
[a] Excluding barite or barium sulfate

Water associated with operation of the proposed project would be from the LAA or Lower Owens River. The existing DCAs are operated under Board Order No. R6V-2006-0036, Revised WDRs for the Southern Zones dust control project. Monitoring is conducted and reported semi-annually; the existing dust control project is in compliance with the adopted WDRs. Consequently, the quality of these sources would not violate applicable narrative or numeric water quality standards. Implementation and operation of the Phase 7a project will be done in conformance with the existing WDRs.

Because leachate from the gravel will not significantly increase the toxicity of the brine pool and discharges associated with the project will continue to be in compliance with applicable WDRs, impacts related to water quality are less than significant.

The geotextile proposed for use under Gravel Cover and roadway areas will be permeable to allow draining. Nonwoven geotextiles are pervious sheets of polyester or polypropylene composed of fibers held together by needle punching, spun bonding, thermal bonding or resin bonding. The geotextile is chemically inert and generally not affected by acids and alkalis that may be present in the soils. The geotextile fabric to be used for the Phase 7a project will be non-hazardous as defined by the Federal Hazard Communication Standard CFR 1910.1299 (**Appendix C**). Because the geotextile will be permeable, chemically inert and non-hazardous, it will not contribute contaminants to stormwater or underlying soils. The impact on water quality and soils from use of the geotextile is therefore less than significant.

4.5.5.2 Impacts to Drainage Patterns

Issues identified in the comments on the NOP consisted of the following:

- Design of berms/roads blocking natural flow of surface and shallow groundwater
- Potential effects on mining operations from changes in drainage patterns
- Alterations of flow regimes and groundwater
- Watershed–level effects including pollutant removal, flood water retention and habitat connectivity

Construction of new DCMs will result in localized changes to drainage patterns in the vicinity of the Phase 7a DCAs. Construction of the raised berms / access roadways around the primary Phase 7a DCAs will alter the existing stormwater drainage pattern in the immediate area of each affected DCA. Berm heights will vary from 3 to 5 ft or less above existing ground surface. Stormwater intercepted by the roadways will be routed toward existing channels through culverts to minimize changes to downstream flow patterns. Similar to existing DCM design, stormwater will continue to flow around the containing berms toward the brine pool. Experience with this design has shown that modifications in the drainage pattern resulting from the project will not result in substantial erosion or siltation, flooding, or add a substantial source of polluted runoff. Because the drainage pattern from the project sites flows in the same direction as existing conditions and eventually to the brine pool, the impact on drainage pattern and stormwater drainage will be less than significant.

Construction of shallow flooding at Site T1A-4 is adjacent to the Rio Tinto Minerals operation. This site will be contained by raised berms / roadways which could change surface water flow directions. Since the shallow flooding operation is intended to apply only sufficient water to maintain saturated soil conditions (lateral Shallow Flooding) and not ponded water or flood irrigation, the potential impact of this DCA on the mining operation is less than significant. Note that the existing Lake Minerals Road (which currently traverses T1A-4) will be re-routed to the new T1A-4 perimeter berm. Changes in surface runoff patterns could increase the risk of storm damage to the existing mineral ponds. This impact is addressed by the following design measures:

- Water-retention berms will be located along the down-gradient and side boundaries of each Shallow Flooding block to minimize leakage and increases in the rate, quantity, or quality of dust control waters and stormwater flows to the mineral lease area. These berms shall be designed to collect excess surface water along the side-slope and down-slope borders of each flooding-area block and convey the flows to existing channels draining to the brine pool.

- Shallow Flooding design of the T1A-4 area will ensure that there is no increase in the rate and quantity, or decrease in the quality, of storm water flows to the mineral lease areas. The mineral lease will be protected from increased flash flood damage potential due to the channelization of waters and transport of sediments.

Because these measures are incorporated into project design, the impact from changes in drainage patterns on the mineral lease will be less than significant.

Construction of new Shallow Flooding DCMs may also result in localized changes to shallow groundwater flow patterns. As part of the Owens Lake Groundwater Evaluation Project (OLGEP), MWH conducted an analysis of the effects of DCMs on the hydrologic regime of the Owens Lake (MWH, 2011b). MWH reviewed historical groundwater level data from GPUAPCD shallow piezometers and other deeper monitoring wells before and after implementation of DCMs. A review of hydrographs suggests that DCMs influence groundwater water levels only immediately adjacent to the DCMs, and only in the very shallow piezometers on the lake bed. Comparison of water levels in shallow and deep monitoring wells generally indicates a consistent upward groundwater gradient, which implies that groundwater is flowing toward the ground surface, where it is ultimately consumed by evaporation.

The effect of DCMs on groundwater appears to be limited to thin sand layers on the surface of the lake, because DCMs have no apparent effect on deeper aquifer zones. The presence of strong upward vertical gradients and relatively impermeable lake bed clays prohibits water from DCMs migrating downward into deeper aquifers. A review of groundwater level measurements before and after construction of DCMs suggests that water from DCMs is not affecting flow directions or the amount of groundwater in storage in deeper aquifers. This is consistent with the fact that the DCMs are underlain by a large thickness of relatively impermeable clays which effectively isolate them from the deeper groundwater system (MWH, 2011b).

No new areas of Pond Shallow Flooding are proposed in the primary Phase 7a DCAs; Pond Shallow Flooding is included in the design of four of the Transition Areas. Based on the type of new Shallow Flooding proposed and on the groundwater evaluation, the construction of new Shallow Flooding and Managed Vegetation areas may result in slightly higher shallow groundwater levels in the vicinity of new DCMs. However, based on observation of existing shallow groundwater data, this change is less than significant.

4.5.5.3 Impact Summary

As discussed above, the project will not exceed hydrology and water quality thresholds of significance; therefore, impacts will be less than significant.

4.5.6 Mitigation Measures

Since no significant impacts have been identified, no mitigation measures are required.

Section 4.6
Land Use

4.6 LAND USE

Based on the information presented in the Initial Study for the Phase 7a project (**Appendix A**), LADWP determined that the project would not have the potential to significantly impact land use and planning. However, a comment letter received from the CSLC (**Appendix B**) raised additional issues regarding public trust uses and values. Therefore, land use and planning (in regard to conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project) has been carried forward for analysis in this EIR. Additionally, cumulative impacts on recreation on Owens Lake are described in **Section 6** in response to NOP comments received from CSLC regarding recreation and the Owens Lake Master Plan. As described in the Initial Study, the project will not physically divide an established community or conflict with an applicable habitat conservation plan or natural community conservation plan. Therefore, these topics are not discussed further in this EIR.

4.6.1 Regulatory Framework

4.6.1.1 California State Lands Commission

The Phase 7a project area is located on land owned and operated in trust for the people of the State of California by the CSLC. Public Resources Code section 6301 and 6216 authorize CSLC authority and responsibility as trustee of the State's Public Trust lands. A lease from CSLC would be required in order to install DCMs on the Phase 7a property. In granting the lease, CSLC would consider the Public Trust Doctrine. Public Trust Doctrine embraces the right of the public to use the navigable waters of the State for bathing, swimming, boating, and general water-related recreational purposes (CSLC, 2007). Additionally, the Public Trust Doctrine is sufficiently flexible to encompass changing public needs, such as to include the preservation of the lands in their natural state for scientific study, as open space and as wildlife habitat (CSLC, 2007).

4.6.1.2 Inyo County General Plan

The Land Use Element of the Inyo County General Plan (2001) includes Policy LU-5.6 State and Federal Lands Designation (SFL). This designation applies to those State- and Federally-owned parks, forests, recreation, and/or management areas that have adopted management plans. The Conservation/Open Space Element of the Inyo County General Plan (2001) includes Policy REC-1.2 Recreational Opportunities on Federal, State, and LADWP Lands: Encourage the continued management of existing recreational areas and open space, and appropriate expansion of new recreational opportunities on federal, state, and LADWP lands.

4.6.1.3 GBUAPCD State Implementation Plan

The 2008 SIP addressed the placement of 15.1 square miles of DCMs on Owens Dry Lake including 9.2 square miles of Shallow Flooding, 3.5 square miles of Moat and Row DCMs, 0.5 square mile of channel area that may require DCMs, and 1.9 square miles of Study Area of which some or all may require controls after 2010. The currently proposed Phase 7a project would reduce dust emissions on these previously identified areas using currently approved BACM and Tillage (which has been previously approved as an interim measure).

4.6.1.4 U.S. Bureau of Land Management

The new Phase 7a project areas do not overlap with the 15,790-acre Bishop Resource Management Plan Owens Lake Management Area managed by BLM; the Ridgecrest Resource Area of the California Desert Conservation Area managed by BLM per the California Desert Conservation Area Plan (CDCAP); or the wilderness areas, national parks, and national preserve managed by BLM under the California Desert Protection Act. The T30-1 Transition Area is partially located on private and BLM land. Existing agreements are in place for dust control; alteration of the method of dust control on these same parcels is anticipated to be consistent with the existing agreements.

4.6.2 Environmental Setting

The project sites are located on CSLC-administered lands within Inyo County. The Inyo County General Plan designates the land use of the Phase 7a area as SFL (State and Federal Lands). The zoning overlay is OS-40 (Open Space, 40-acre lot minimum) (Inyo County, 2011). The closest communities to the Phase 7a project areas are located outside the regulatory Owens lake bed (**Table 2-1**). No permanent habitable structures are located on or immediately adjacent to the project site, and none are planned as part of the proposed project.

As a condition of its lease with CSLC, LADWP allows public access to Owens Lake and members of the public are able to birdwatch, hike, hunt, and utilize the roads constructed by LADWP to access areas of the lake bed that would be inaccessible without them (LADWP, 2010d).

4.6.3 Significance Criteria

The proposed project would have a significant impact on land use and planning if it (State CEQA Guidelines, Appendix G):

- Conflicted with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

The proposed project would have a significant impact on recreation if it (State CEQA Guidelines, Appendix G):

- Included recreational facilities or required the construction or expansion of recreational facilities which had an adverse physical effect on the environment.

4.6.4 Impacts

4.6.4.1 Public Trust

The following analysis considers impacts from installation of dust control on 3.1 square miles of the Phase 7a area and transition of 3.4 square miles of existing Shallow Flooding to a mix of BACM to conserve water (original Phase 7a Project). However, as noted previously, LADWP has identified an environmentally superior alternative (Avoidance Alternative, see Section 5) which will reduce impacts on significant cultural resources to less than significant levels, and reduce dust to the maximum extent feasible. Under the Avoidance Alternative, BACM would not be installed on approximately 350 acres of the 3.1 square miles of DCAs identified for dust control. Since the Avoidance Alternative would result in less impacts than the original Phase 7a Project, the following analysis presents a worst-case impact assessment.

In their comment letter on the NOP (**Appendix B**), CSLC notes that Owens Lake is sovereign land held in trust for the people of the State under the Public Trust Doctrine. This common law doctrine ensures the public's right to use California's waterways for navigation, fishing, boating, and other water-oriented activities. CSLC has determined that preservation of lands in their natural state to protect scenic and wildlife habitat values is an appropriate Public Trust use. CSLC has also determined that uses that do not protect or promote Public Trust values, are not water dependent or oriented, or exclude rather than facilitate public access and use, are not consistent with the Public Trust Doctrine. CSLC further stated in its NOP letter that placement of Gravel Cover does not protect or promote the Public Trust uses and values of Owens Lake. Notwithstanding this finding, CSLC has indicated its willingness to allow some areas of Gravel Cover to be implemented by the issuance of a lease amendment (PRC 8079.9, December 2010) for the Phase 8 project (2.03 square miles of Gravel Cover) and approval of the proposed gravel color (C. Fossum, pers. comm., 2011). As noted in the Phase 8 lease agreement, LADWP acknowledges that a lease amendment for the Phase 7a project will require additional CSLC review, including review of the proposed Gravel Cover elements.

LADWP does not concur that Gravel Cover BACM is inconsistent with the public trust. It is LADWP's position that the reduction in air pollutant emissions from implementation of dust controls will result in an improvement to public health and safety, a public trust benefit. Other components of the Phase 7a project that will enhance Public Trust uses and values are water conservation, recreational amenities, and habitat enhancements. Project components have been designed to improve wildlife habitat, including the placement of Gravel Cover in patches adjacent to water to provide potential nesting and loafing habitat for shorebirds and loafing habitat for waterfowl (see **Section 4.3.5**). The proposed project will also increase the overall vegetated area on the lake, as well as increase the habitat values of the vegetated areas. For example, habitat islands for Transition Areas will increase the diversity of habitats for foraging and loafing; habitat produced by the project will benefit breeding waterfowl, specifically, the many ponds adjacent to vegetation will provide additional habitat diversity in the form of vegetation cover and shoreline foraging areas; and implementation of the project will more than double the acreage of vegetation currently present in the Phase 7a project area, and increase the overall plant species diversity (see **Section 4.3.5.2**). Once construction activities are complete, public access will also be enhanced under Phase 7a. Therefore, the impact of the Phase 7a project on land use is less than significant.

4.6.4.2 Recreation

Since release of the NOP for the EIR, design of the Phase 7a Transition Areas has progressed. Limited public access opportunities are proposed and have been defined as part of the project. These include: boardwalks, trails, access berms and visitor overlooks. Landscape architects are working with project design engineers to incorporate these elements to enhance the recreational amenities of Owens Lake. During project construction, public access will be restricted in work areas to protect public safety. After construction is complete, recreational opportunities will be enhanced. Therefore, impacts on recreation are less than significant.

4.6.5 Mitigation Measures

Since no significant impacts have been identified, no mitigation measures are required.

Section 5
Project Alternatives

5.1 Project Alternatives

Under CEQA Guidelines Section 15126.6(a), an EIR must "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." The objective of the Phase 7a project is to implement dust control measures on Owens Lake to meet regulatory dust control requirements without increasing water commitments while maintaining existing habitat, improving aesthetics, providing safe limited public access, preserving cultural resources, and utilizing existing infrastructure and vegetation. The significant environmental impacts of the originally proposed project are construction-related impacts on biological resources, cultural resources, and traffic hazards, and construction-related dust emissions. Mitigation measures have been identified to reduce impacts on biological impacts, traffic hazards, and air quality to less than significant levels. However, there are no feasible mitigation measures that would reduce impacts on cultural resources to less than significant levels for the originally proposed project. Therefore, alternatives analysis is focused on alternatives to the originally proposed Phase 7a project that would avoid or substantially lessen impacts to cultural resources. A summary of the Phase 7a planning process is also provided.

5.2 Summary of the Phase 7a Planning Process

As part of the planning process for the Phase 7a project, a range of project alternatives were considered. As detailed below, several alternatives were found to be infeasible and are therefore not considered further in this EIR.

5.2.1 Original Moat and Row Project

Originally, 3.1 square miles of the Phase 7a DCAs (T1A-3, T1A-4, T12-1, T32-1, T37-1 and T37-2) were part of the 13.2 square miles identified as the Phase 7 project. Dust control on these areas was prescribed by GBUAPCD Order 080128-01, and 3.5 square miles were proposed for the implementation of Moat and Row DCM. A lease from CSLC for one of the seven parcels (area T1A-1) was granted in December 2009 for the installation of sand fences on approximately 0.4 square miles; construction of the sand fences was completed in October 2010. The CSLC lease amendment for the remaining 3.1 square miles of Moat and Row was denied. Since there are approximately 3 square miles remaining to be controlled, LADWP conducted a planning process for a new Phase 7a project.

Among other goals, the objective of the Moat and Row project was to implement dust control without increasing the overall volume of Aqueduct water used on the lake. A stated objective of the Moat and Row project was to allow for the sparing use of water that would otherwise be delivered for municipal and industrial use and substantially reduce or eliminate the use of water in implementing new dust control projects on the Owens Lake bed. Another stated objective was to minimize the long-term consumption of natural resources (e.g., water). In keeping with these objectives, LADWP sought to identify a new Phase 7a project that would be essentially water neutral – whatever new water supplies were required for the project would be offset by water conservation in other elements of the OLDMP.

5.2.2 Identification of BACM for Phase 7a DCAs

First, dust control methods were identified for the six primary Phase 7a DCAs (T1A-3, T1A-4, T12-1, T32-1, T37-1 and T37-2). Managed Vegetation was identified for T32-1 since this area is currently partially vegetated and soils are anticipated to be suitable for sprinkler-supported Managed Vegetation. Shallow Flooding was identified for T1A-4 since soil conditions in the DCA would not support Gravel Cover or Managed Vegetation. Gravel Cover was identified for T1A-3 since this large DCA would require substantial water supply for either Managed Vegetation or Shallow Flooding (especially in consideration of the cumulative water demand of T1A-3 plus T1A-4 if both were Shallow Flooding). Gravel Cover was identified for T37-1 since it is contiguous with the Phase 8 Gravel Cover area. Gravel Cover was also initially identified as the primary BACM for T37-2 since this DCA is isolated from other dust control areas and there is no existing water supply. However, based on the soil conditions and concerns about the constructability of Gravel Cover in T37-2, the proposed BACM was modified to Shallow Flooding and Managed Vegetation, and routes for a new water supply pipeline were studied. T12-1 was identified as an area to continue testing the effectiveness of Tillage for dust control.

5.2.3 Identification of Transition Areas

Based on the initial concept for the six primary Phase 7a DCAs, a preliminary water demand value was calculated. To offset this demand, transition of 3 to 4 square miles of existing Shallow Flooding DCAs was examined. Approximately 6 square miles of Shallow Flooding DCAs were evaluated: T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b. A greater acreage was considered since soil and drainage data are limited, and it was anticipated that some areas would prove too difficult to vegetate. Owens Lake soils present significant challenges (mainly a combination of very high salinity, extremely poor drainage, and low bearing capacity) for the establishment of compliant stands of vegetation.

Based on the anticipated success of vegetation efforts within the Transition Areas, the specific 3.4 square miles were identified. T35-1 and T35-2 were identified for Gravel Cover since these areas are embedded within the Phase 8 Gravel Cover area and conversion to gravel will create a continuous expanse in this area. The remaining Transition Areas proposed for BACM Hybrid were selected based on input from the Owens Lake Master Plan Habitat Work Group. Generally these areas were thought to have the best soil qualities for growing vegetation. Other factors were proximity to other habitat areas and current and potential habitat value.

5.2.4 Consideration of an All Shallow Flooding Alternative

Shallow Flooding was the first BACM constructed on Owens Lake. In part, this method was selected since it was implementable within the time frame developed for the initial OLDMP phases. However, development of an all Shallow Flooding project is not proposed for Phase 7a since additional use of Los Angeles Aqueduct water on the lake is deemed infeasible. LADWP Resolution 010-063, the Owens Lake Water Use Policy, sets conservation criteria for the OLDMP. The Resolution states that water conservations measures shall be implemented on Owens Lake to reduce Los Angeles Aqueduct diversion to below 95,000 AFY for existing and future dust control projects. Conservation measures include, but are not limited to, development of more efficient operating methods, exploration of opportunities for transition of Shallow Flooding DCMs to less water-intensive DCMs, and exploration of the use of groundwater underlying Owens Lake for dust control purposes.

As of November 2012, LADWP has installed and is operating 42.38 square miles of DCMs on Owens Lake. Aside from Gravel Cover, operation of these DCMs uses water from the Los Angeles Aqueduct. LADWP determined that the projected water demand for additional Shallow Flooding was not accounted for in its 2010 Urban Water Management Plan (UWMP). Furthermore, the dust control phases can be considered “projects” pursuant to California State Water Code Section 10912 based on the assumption that the water demand associated with the operation of the Shallow Flooding BACM is greater than the amount of water required by a 500 dwelling unit project. As part of the assessment for the Phase 8 project (and in accordance with Section 10910 of the Water Code), LADWP determined that there is insufficient surplus water supply available for LADWP to continue to implement Shallow Flooding as a DCM on Owens Lake (LADWP, 2010b). This finding is also applicable to the Phase 7a project. Therefore, a Phase 7a project that increased overall water demand for dust control on the lake would not attain most of the basic project objectives (e.g., implementation of dust control in a manner that does not increase water commitments) and is deemed economically, socially, and environmentally infeasible by LADWP.

LADWP also conducted an assessment of the energy requirements associated with various water supplies. As LADWP’s local and Owens Valley water resources are reallocated, additional water must be purchased from the Metropolitan Water District of Southern California (Metropolitan). A preliminary assessment of energy required and resultant CO_2 emissions was conducted for Calendar year 2005 (**Table 5-1**).

Table 5-1
Energy Requirements and CO2 Emissions
Associated with Los Angeles Water Supplies (2005)

Sources of Water	Energy Requirement	CO_2 Emissions
	kilowatt hour per acre foot	pounds per acre foot
Metropolitan Untreated Water		
- LA-35 State Water Project	**3,236**	**2,154**
Metropolitan Treated Water		
- LA-21 Harbor	**2,768**	**1,843**
- LA-17 East LA	**2,719**	**1,810**
Tertiary Treated Recycled Water (Tillman)[1]	**428**	**558**
Reverse Osmosis Treated Recycled Water[2]	**1,047**	**1,365**
Seawater Desalination*	**4,100**	**5,345**
Los Angeles Aqueduct (LAA) Untreated Water[3]	**0**	**0**
LAA Filtration Plant Treatment	**32**	**42**
Local Groundwater		
- Pumping	**519**	**677**
- Aeration Treatment	**300**	**391**

1 Tillman = Donald C. Tillman Water Reclamation Plant
2 Conceptual estimate
3 Gravity flow, no energy required. Seven Hydro-Electric Power Plants generate 3.3 megawatt hours per acre-foot (MWh/AF) from water conveyed through the LAA.
Source: LADWP, file data

The direct replacement of Los Angeles Aqueduct water on Owens Lake would be Metropolitan water purchased from via LA-35. Replacement of 8,000 afy would result in additional greenhouse gas emissions of approximately 7,800 metric tons per year. Therefore, an all Shallow Flooding alternative is not considered further in this EIR.

5.2.5 Consideration of an Alternative with No Transition Areas

Another alternative to the proposed project would be implementation of dust control on the six primary Phase 7a DCAs but no implementation of BACM Hybrid in the Transition Areas. Similar to the discussion above, a Phase 7a project that increased overall water demand for dust control on the lake would not attain most of the basic project objectives (e.g., implementation of dust control in a manner that does not increase water commitments) and would result in increased greenhouse gas emissions associated with the energy required to convey replacement water. This alternative is not considered further in this EIR since it is deemed economically, socially, and environmentally infeasible by LADWP.

5.2.6 All Gravel Cover Alternative

Under the All Gravel Cover alternative, Gravel Cover BACM would be installed on five DCAs (T1A-4, T1A-3, T32-1, T37-1 and T37-2) identified as requiring dust control in GBUAPCD Order 110317-01. T12-1 would be tilled and irrigation provided as necessary. The Transition Areas would remain as Shallow Flooding; aesthetic, habitat, and recreation improvements would not be implemented. Construction of a 4-inch gravel layer on 2.8 square miles would require approximately 1,400,000 tons of gravel. The method of gravel installation, including use of a geotextile, would be the same as described for the proposed project. Construction equipment and personnel needed for construction and maintenance would be the same as the Gravel Cover elements of the proposed project. Based on the approximate 20 month schedule for the Phase 8 Gravel Cover project, the total construction period for a Phase 7a All Gravel Cover alternative is estimated at 2 years.

Installation of Gravel Cover requires land leveling, and travel by heavy equipment over the entire surface area of the DCA for installation of geotextile and application of the gravel. Therefore, this alternative would not avoid significant impacts to unique cultural resources present in the primary Phase 7a DCAs. Further, this alternative would not include construction of BACM Hybrid in the Transition Areas; related improvements to habitat conditions, aesthetics and recreation would not occur. Therefore, this alternative is not considered further in this EIR.

5.2.7 Consideration of an Alternative Project Location

The Phase 7a project has been proposed to meet GBUAPCD Order 110317-01 which calls for the reduction of dust emissions on specific areas of Owens Lake. Other locations would not comply with the Order. Therefore, alternative project locations on or off Owens Lake have not been considered. An alternative project location is considered environmentally infeasible.

Therefore, the alternatives identified for the proposed project are No Project, as required by CEQA, and action alternatives that could attain most of the basic project objectives – Avoidance Alternative, Expanded Avoidance Alternative, and Avoidance Alternative with Soil Binders. Additionally, alternative locations for the water supply pipeline to T37-2 are described.

5.3 NO PROJECT

5.3.1 Description

Under the No Project alternative, the existing system of DCMs would continue to be operated on the lake. Five of the six primary Phase 7a DCAs (T1A-4, T1A-3, T32-1, T37-1 and T37-2) would remain mostly barren playa. The Transition Areas would remain as Shallow Flooding; aesthetic, habitat and recreation improvements would not be implemented. Under No Project, T12-1 would still be tilled, and potentially irrigated with portable means, but no permanent irrigation system would be installed to control dust when the tillage effectiveness declines over time. The water supply pipeline to T37-2 would not be installed and the proposed access roadway improvements would not be constructed.

5.3.2 Impacts

Aesthetics – Under No Project, five of the six primary Phase 7a DCAs (T1A-4, T1A-3, T32-1, T37-1 and T37-2) would remain primarily barren playa, consistent with the aesthetics of other undeveloped areas of the lake. The Transition Areas would remain as Shallow Flooding, and aesthetic improvements associated with a mosaic of vegetation, water and gravel with variable edges and transitions would not occur. T12-1 would continue to be tilled. Overall, the impact on aesthetics under No Project would be less than significant.

Air Quality and Greenhouse Gases – Under No Project, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would not occur. However, dust suppression on five of the six primary Phase 7a DCAs (T1A-4, T1A-3, T32-1, T37-1 and T37-2) would not occur. Under No Project, LADWP would not implement GBUAPCD's Abatement Order.

Biological Resources – Under No Project, temporary construction disturbance to approximately 6.5 square miles of Owens Lake would not occur, and therefore existing biological resources found in these areas would not be disturbed by project construction. Similarly, temporary noise, vehicle traffic and foot traffic impacts to Snowy Plover or other nesting birds would not occur. Under No Project, the Transition Areas would remain as Shallow Flooding. The improvement in wildlife habitat anticipated with operation of the Transition Areas would not occur. The large, shallow and topographically variable wetlands that will result from the project are anticipated to have more species diversity than the existing deep and less topographically variable Shallow Flooding DCAs. No Project will not increase ponded or saturated areas or vegetation, and will therefore not increase forage and nesting habitat for Snowy Plover and other species.

Cultural Resources – Under No Project, known significant cultural resources sites located in the primary Phase 7a DCAs would not be damaged or destroyed by construction activity, or by inadvertent disturbance during operation of the DCAs.

Hydrology – Under No Project, site specific changes in drainage patterns within the DCAs would not occur. Temporary stormwater quality impacts associated with construction and operations activities, including the use of fuels, would not occur.

Land Use - Under No Project, the primary Phase 7a DCAs would remain playa and 0.2 square miles of T12-1 would be tilled. Existing land use and recreational opportunities on the lake would not be altered.

Summary - Overall, No Project would prevent un-mitigable significant impacts on cultural resources that will result with the proposed project. However, No Project would not achieve dust control in the Phase 7a areas as required by the Abatement Order. Under No Project, the habitat and aesthetic improvements anticipated in the Transition Areas would not occur. Therefore, the No Project Alternative is not environmentally superior to the proposed project.

5.4 AVOIDANCE ALTERNATIVE

Based on analysis conducted for the project (described in **Section 4.4**), LADWP has identified an Avoidance Alternative in order to reduce impacts on significant cultural resources to less than significant levels, and to reduce dust to the maximum extent feasible. The Avoidance Alternative is identified as environmentally superior to the original Phase 7a project.

5.4.1 Description

Under the Avoidance Alternative, boundaries of select DCAs would be redefined to avoid significant cultural resources. As noted in CEQA Guidelines Appendix K, "in-situ preservation of a site is the preferred manner of avoiding damage to archaeological resources. Preserving the site is more important than preserving the artifacts alone because the relationship of the artifacts to each other in the site provides valuable information than can be lost when the artifacts are removed. Further, preserving the site keeps it available for more sophisticated future research methods. Preservation may also avoid conflict with religious or cultural values of groups associated with the site." Specifically, T1A-3, T32-1, T37-1, and T37-2 would be reduced in size to avoid known cultural resources sites plus a 100 foot buffer around the cultural sites. There are 11 cultural resources sites located on Phase 7a project areas that are recommended as eligible under the CRHR. Of these unique and CEQA significant sites, one will be completely avoided by minor redesign of the project; 10 are located within Phase 7a DCAs. [Three additional sites (one CRHR-eligible, two unevaluated) will be avoided by minor project design modifications.] **Table 5-2** summarizes the approximate changes in the acreages to be controlled under the Avoidance Alternative. Maps of the Avoidance Alternative DCA boundaries are not provided in order to protect the confidentiality of the cultural resources sites.

Table 5-2
Phase 7a Avoidance Alternative BACM Summary

DCA	Original Phase 7a Project	Phase 7a Avoidance Alternative Project (approximate acres)
T1A-3	• 518 acres of Gravel Cover	• 324 acres of Gravel Cover
T32-1	• Up to 108 acres of Managed Vegetation	• Up to 65 acres of Managed Vegetation
T37-1	• 43 acres Managed Vegetation • 94 acres Gravel Cover	• 60 acres Gravel Cover
T37-2	• 38 acres Managed Vegetation • 340 acres Shallow Flooding / Shallow Flooding Transition	• Up to 24 acres of Managed Vegetation • 340 acres Shallow Flooding / Shallow Flooding Transition

Under the Avoidance Alternative, the Transition Areas will be modified as described for the proposed project, Tillage will be implemented in T12-1, the water supply pipeline to T37-2 will be constructed, and the access roadway will be improved. Construction methodology in T1A-3, T32-1, T37-1 and T37-2 will be as described for the proposed project but the length of the construction period will be correspondingly reduced. Overall, the Avoidance Alternative reflects an approximate 8 percent reduction in the scale of the project.

5.4.2 Impacts

Aesthetics – Under the Avoidance Alternative, impacts on aesthetics will be substantially the same as under the proposed project. Approximately 350 acres of the project area would remain as primarily barren playa, but views of most of T1A-3, T32-1, T37-1 and T37-2 would be as described for the proposed project. Aesthetic improvements in the Transition Areas would occur. Overall, the Avoidance Alternative would be similar to the proposed project, but since less acreage would be altered, this alternative would have less aesthetic impact than the proposed project.

Air Quality and Greenhouse Gases – Under the Avoidance Alternative, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be reduced as compared to the proposed project by approximately 8 percent.

However, dust suppression measures on 350 acres would not be implemented and these areas could potentially emit fugitive dust. However, the emission reductions originally expected in the 2008 SIP can still be achieved if the cultural resources sites are avoided.

The 2008 SIP's attainment strategy provides that control of 43 square miles of the Owens Lake bed will result in the OVPA achieving attainment of the PM_{10} NAAQS by 2017. After approval of the 2008 SIP, and in order to secure a variance to cover the delays for the Phase 7 project that were outside LADWP's control, GBUAPCD required LADWP to install dust controls on an additional 2.03 square miles of Owens Lake. This project, known as Phase 8, consists of 2.03 square miles of Gravel Cover, and was not required as part of the 2008 SIP attainment strategy. Therefore, LADWP has already committed to controlling dust on approximately 45 square miles of Owens Lake, 2 miles more than was required in the 2008 SIP for the OVPA to reach attainment. Moreover, the Phase 7a dust controls are also expected to achieve a 99 percent control efficiency, which exceeds the control efficiencies called for in the 2008 SIP and Board Order 080128-01 for some BACM.

The overall emissions reductions as a result of the existing OLDMP, together with Phase 8 and the Avoidance Alternative, are expected to be greater than the dust reductions identified in the 2008 SIP. Therefore, the Avoidance Alternative is consistent with the applicable air quality plan for the project area and impacts on the air quality plan will be less than significant. If this alternative is adopted as the proposed action by the Board of Water and Power Commissioners, modification of relevant GBUAPCD Orders may be necessary.

Biological Resources – Under the Avoidance Alternative, temporary construction disturbance to approximately 350 acres of Owens Lake would not occur, and therefore existing biological resources found in these areas would not be disturbed by project construction. **Table 5-3** summarizes existing vegetation types in the avoidance areas. The majority is barren playa, but there are approximately 9 acres of desert saltbush scrub and 4 acres of alkali meadow that would not be disturbed under the Avoidance Alternative. Avoidance of the cultural resources sites would also reduce the areas of new Managed Vegetation by approximately 100 acres; no reduction in Shallow Flooding acreage would occur. The improvement in vegetation conditions in the Transition Areas and resultant improvements in wildlife habitat anticipated with operation of the Transition Areas would still occur under this alternative. Although less Managed Vegetation would result under this alternative, with implementation of the mitigation measures identified for the proposed project, and with improvements in the Transition Areas, the impact of the Avoidance Alternative on biological resources would be less than significant.

Table 5-3
Land Cover Types in the Avoidance Areas[1] (acres)

DCA	Barren Playa[2]	Desert Saltbush Scrub[3]	Alkali Meadow	Saturated Soil	Total
T1A-3	192.5	6.4	0.0	0.0	199
T32-1	43	0.03	0.0	0.0	43
T37-1	78	2.1	0.0	0.0	80
T37-2	21.3	0.09	4.1	0.0	26

Acreages as of 2011 Biological Resources Survey (LADWP, 2011)
1 Includes areas within DCAs and buffer areas
2 Includes roadways and other disturbed areas.
3 Desert Saltbush Scrub (Element Code 36110)

Cultural Resources – Under the Avoidance Alternative, 10 known significant cultural resources sites (approximately 350 acres) located in the primary Phase 7a DCAs would not be damaged or destroyed by construction of the project. Since the DCA perimeter berms would be correspondingly reconfigured, the significant cultural sites would also be protected from inadvertent disturbance during operation of the project. The cultural sites would not be studied further under the Phase 7a project, and therefore no new information on the sites would be documented. The sites would be subject to continued weathering by wind and water. This is a natural process and not an impact of the proposed project alternative. With implementation of mitigation measures identified for the proposed project, the Avoidance Alternative would have a less than significant impact on cultural resources. The Avoidance Alternative would have substantially less impact on cultural resources as compared to the proposed project.

Hydrology – Under the Avoidance Alternative, site specific changes in drainage patterns within select portions of four DCAs would not occur. Temporary stormwater quality impacts associated with construction and operations activities would be slightly reduced as compared to the proposed project. Overall, impacts on hydrology and water quality would be less than significant, and less than the proposed project.

Land Use - Under the Avoidance Alternative, dust control would be installed on approximately 2.6 square miles of Owens Lake, 0.2 square miles of T12-1 would be tilled, and 3.4 square miles of existing Shallow Flooding would be transitioned to BACM Hybrid.

Summary - The Avoidance Alternative would prevent un-mitigable significant impacts on cultural resources that would occur with implementation of the original Phase 7a project. Impacts to biological resources would be less than significant, but the Avoidance Alternative would result in less Managed Vegetation on the lake (approximately 100 acres) than under the originally proposed project, although the improvements in habitat value of the Transition Areas would occur. With less construction required, this alternative would have fewer temporary air pollutant emissions during construction than the proposed project. The Avoidance Alternative would achieve the basic project objective of dust control in approximately 2.6 square miles of the Phase 7a areas identified as emissive. Under this alternative, dust control with 99 percent efficiency would be implemented in 2.6 square miles. The overall emissions reductions as a result of the existing OLDMP, Phase 8 and the Avoidance Alternative, are expected to be greater than the dust reductions identified in the 2008 SIP. Implementation of the Avoidance Alternative would require implementation of the mitigation measures identified for the original Phase 7a project.

5.5 EXPANDED AVOIDANCE ALTERNATIVE

5.5.1 Description

The re-defined acreages of the DCAs under the Avoidance Alternative were determined based on the extensive cultural resources surveys and evaluations conducted for the Phase 7a project (GANDA, 2012). Avoiding these sites will avoid substantial adverse changes in the significance of cultural resources as defined in Public Resources Code Sections 21083.2 and State CEQA Guidelines section 15064.5. However, based on consultation with Lone Pine Paiute-Shoshone tribe, LADWP has identified a variation of the Avoidance Alternative; with an additional 60 acres avoided. This alternative was identified in response to Native American concerns that the recent discovery of cultural resources sites on the lake is very important to their people and heritage, and therefore, is worth being saved. “This lake has so much history and much of it is already gone, as the lake is being further mitigated, our heritage is being destroyed. Enough is enough” (K. Bancroft, personal communication, 2012). Although the Phase II archaeological investigation conducted for the project did not identify the 60-acre parcel as within a significant cultural site, the tribe is concerned that additional subsurface resources will be uncovered once earthwork begins.

This alternative would be identical to the Avoidance Alternative with the addition that no dust control measures would be constructed in the 60 acres identified by the tribe as culturally sensitive.

5.5.2 Impacts

Aesthetics – Under the Expanded Avoidance Alternative, approximately 410 acres of the project area would remain as primarily barren playa, but views of most of T1A-3, T32-1, and T37-2 would be as described for the proposed project. Aesthetic improvements in the Transition Areas would occur. Overall, the Expanded Avoidance Alternative would be similar to the proposed project, but since less acreage would be altered, this alternative would have less aesthetic impact than the proposed project or the Avoidance Alternative.

Air Quality and Greenhouse Gases – Under the Expanded Avoidance Alternative, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be reduced as compared to the proposed project by approximately 10 percent.

Dust suppression measures on 410 acres would not be implemented and these areas could potentially emit fugitive dust. However, the reductions originally expected in the 2008 SIP can still be achieved if the cultural resources sites are avoided. The 2008 SIP's attainment strategy provides that control of 43 square miles of the Owens Lake bed will result in the OVPA achieving attainment of the PM_{10} NAAQS by 2017. After approval of the 2008 SIP, GBUAPCD required LADWP to install an additional 2.03 square miles of dust controls for the Phase 8 project that was not required as part of the 2008 SIP attainment strategy. Therefore, LADWP has already committed to controlling dust on approximately 45 square miles of Owens Lake, 2 miles more than was required in the 2008 SIP for the OVPA to reach attainment. Moreover, the Phase 7a dust controls are also expected to achieve a 99 percent control efficiency, which exceeds the control efficiencies called for in the 2008 SIP and Board Order 080128-01 for some BACM.

The overall emissions reductions as a result of the existing OLDMP, together with Phase 8 and the Expanded Avoidance Alternative, are expected to be greater than the dust reductions identified in the 2008 SIP. Therefore, the Expanded Avoidance Alternative is consistent with the applicable air quality plan for the project area and impacts on the air quality plan will be less than significant.

Biological Resources – Under the Expanded Avoidance Alternative, temporary construction disturbance to approximately 410 acres of Owens Lake would not occur, and therefore existing biological resources found in these areas would not be disturbed by project construction. In additional to the vegetation types summarized in **Table 5-3**, an additional 6 acres of desert saltbush scrub and approximately 54 acres of barren playa would not be disturbed. Avoidance of the CRHR-eligible cultural resources sites and the additional 60 acres identified by the tribe as culturally sensitive would reduce the areas of new Managed Vegetation; no reduction in Shallow Flooding acreage would occur. The improvement in vegetation conditions in the Transition Areas and resultant improvements in wildlife habitat anticipated with operation of the Transition Areas would still occur under this alternative. Overall, the Expanded Avoidance Alternative would decrease the area of vegetation on the lake as compared with the proposed project. Although less vegetation would result, with implementation of the mitigation measures identified for the proposed project and improvements in the Transition Areas, the impact of the Expanded Avoidance Alternative on biological resources would be less than significant.

Cultural Resources – Under the Expanded Avoidance Alternative, 10 known significant cultural resources sites (approximately 350 acres) located in the primary Phase 7a DCAs would not be damaged or destroyed by construction of the project. An additional 60 acres identified as culturally sensitive by the Lone Pine Paiute-Shoshone tribe would also not be disturbed by project construction. With implementation of mitigation measures identified for the proposed project, the Expanded Avoidance Alternative would have a less than significant impact on cultural resources. The Expanded Avoidance Alternative would have substantially less impact on cultural resources as compared to the proposed project, and less impact as compare to the Avoidance Alternative.

Hydrology – Under the Expanded Avoidance Alternative, site specific changes in drainage patterns within select portions of several DCAs would not occur. Temporary stormwater quality impacts associated with construction and operations activities would be slightly reduced as compared to the proposed project. Overall, impacts on hydrology and water quality would be less than significant, and less than the proposed project.

Land Use - Under the Expanded Avoidance Alternative, dust control would be installed on approximately 2.5 square miles of Owens Lake, 0.2 square miles of T12-1 would be tilled, and 3.4 square miles of existing Shallow Flooding would be transitioned to BACM Hybrid.

5.5.3 Summary of Impacts

Implementation of the Expanded Avoidance Alternative would prevent un-mitigable significant impacts on cultural resources that would occur with implementation of the proposed project. Impacts to biological resources would be less than significant, but this alternative would result in less Managed Vegetation on the lake than under the originally proposed project, although the improvements in habitat value of the Transition Areas would occur. With less construction required, this alternative would have fewer temporary air pollutant emissions during construction than the originally proposed project.

Under this alternative, dust control with 99 percent efficiency would be implemented in 2.5 square miles. The basic objectives of the proposed project would be met in the majority of the project area (2.5 square miles), but approximately 410 acres would not have dust controls as required by the Abatement Order. The overall emissions reductions as a result of the existing OLDMP, Phase 8 and the Expanded Avoidance Alternative, are expected to be greater than the dust reductions identified in the 2008 SIP. The Expanded Avoidance Alternative is considered environmentally superior to the originally proposed project and to the Avoidance Alternative in regard to cultural resources but would not achieve as much of the dust control objective as the original project or the Avoidance Alternative. The Expanded Avoidance Alternative is not environmentally superior to the proposed project or to the Avoidance Alternative in regard to air quality.

5.6 AVOIDANCE ALTERNATIVE WITH SOIL BINDER

5.6.1 Description

The objective of the Phase 7a project is to implement dust control measures on Owens Lake to meet regulatory dust control requirements without increasing water commitments while maintaining existing habitat, improving aesthetics, providing safe limited public access, preserving cultural resources, and utilizing existing infrastructure and vegetation. The Avoidance Alternative would meet this goal on approximately 2.6 square miles; 0.5 square miles (350 acres) would not be controlled. Therefore an alternative that avoided earthwork in areas of known significant cultural resources but which still controlled dust was considered as suggested by GBUAPCD. Under the Avoidance Alternative with Soil Binder, the boundaries of the four DCAs with significant cultural resources sites would be redefined, and the acreage of BACM would be as described in **Table 5-1**. To control dust in approximately 350 acres of the cultural resources areas, one or more soil binders would be surface applied to portions of four DCAs. The total size of the areas to be treated with soil binders is approximately 350 acres.

Soil binders are stabilizing substances applied to the soil surface to temporarily reduce wind and water-induced erosion of exposed soils. Soil binders are not identified as BACM for Owens Lake, but review of their efficacy for dust control on the lake is on-going. Most commonly used at construction sites and on unpaved roadways and shoulders, over 25 percent of public and 22 percent of private roads in the United States are treated with chemical dust suppressants (EPA, 2002). Soil binders have been identified as an alternative to the three identified BACM for dust suppression on portions of the Phase 7a areas because they may not require extensive land leveling or other earthwork that could disturb or destroy cultural resources. The goal of application of soil binder to the surface of a portion of the relevant DCAs would be to form a dust control crust.

Common dust suppressants include: salts and brines, petroleum-based organics (asphalt emulsion, oils), non-petroleum based organics (vegetable oil, fats), synthetic polymers (polyvinyl acetate, vinyl acrylic), electrochemical products (enzymes, ammonium chloride), clay additives (bentonite), and mulch (paper, wood) (EPA, 2002; UDFCD, 2010). Several soil stabilizers, of two general types, have been identified for potential use for the Phase 7a project: hygroscopic salts and synthetic polymer emulsions (**Table 5-4**). Hygroscopic salts absorb moisture from the air, limiting the number of smaller dust particles which become airborne. Synthetic polymers bind soil particles, acting as a weak cement to weigh down and agglomerate particles. They are industrially produced chemical substances consisting of a number of molecules linked together with covalent bonds. Examples include plastics and synthetic rubber.

Table 5-4
Soil Stabilizing Products Considered for Phase 7a Avoidance Alternative with Soil Binders

Soil Binder Product Name	Manufacturer	Primary Component(s)	Notes
Dust-Off	Cargill	magnesium chloride	Hygroscopic salt derived from seawater; soluble in water; absorbs moisture from the air, limiting the number of smaller particles which become airborne Per MSDS: stable, no hazards identified, no toxicology or ecotoxicological data noted
Soil-Sement®	Midwest Industrial Supply, Inc.	vinyl acetate polymer	Aqueous acrylic vinyl acetate polymer emulsion; binds to soil particles and creates an stabilized 7 to 25 cm layer; non-hazardous; pre-certified by CARB to verify performance claims Per MSDS; stable, non-hazardous, LC50 for goldfish>12,500 ppm, LC50 for invertebrate (*Daphnia*) calculated at 3,482.8 ppm
TPro 400/500	Terratech	styrenated butatiene rubber	Water based latex copolymers; non-combustible; non-reactive; may contain low levels of volatile organic compounds (VOC's) or ammonia which evaporate during application and drying Per MSDS: No bioconcentration of the polymeric component is expected because of its high molecular weight. The polymeric component is not expected to biodegrade. Based largely or completely on information for similar material(s), material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 > 100 mg/L in the most sensitive species tested).
PX300	G. Boston Company	enzymatic vinyl polymer	Polymer penetrates the surface binding with the soil to form a durable layer Per MSDS: stable, no toxicology or ecotoxicological data noted
Earth Poly	Environmental Products & Applications, Inc.	calcium carbonate, titanium dioxide and vinyl acetate mix	Calcium carbonate (calcite) is found in rocks, is the main component of shells, and is the main ingredient of agricultural lime. Titanium dioxide is naturally occurring oxide of titanium, used in paint, sunscreen and liquid paper. Vinyl acetate is a colorless volatile liquid unsaturated ester that polymerizes readily in light and is used for making polyvinyl acetate. Per MSDS: stable, no toxicology or ecotoxicological data available
HydroBio	TETRA Technologies	calcium chloride	Hygroscopic salt; soluble in water; absorbs moisture from the air, limiting the number of smaller particles which become airborne Per MSDS: Product will not biodegrade or bioaccumulate. Tested on Owens Lake in August 2010

EC50 = effective concentration which affects 50 percent of sample population
LC50 = lethal concentration which kills 50 percent of sample population
LL50 = ratio of test material to water that is lethal to 50 percent of the exposed population
EL50 = ratio of test material to water that causes adverse effects of 50 percent of the exposed population

Application Method. Product-specific storage, handling, application methods, and health and safety precautions would be followed as per the manufacturers' recommendations. Soil binders would be applied by a tanker truck traveling on an access road. Recommended application rates range from 165 to 2,420 gallons per acre. Each application would take one to two trucks approximately 3 months. The depth the binder will penetrate the soil is estimated at 0.25 to 2 inches. Generally, soil binders require a curing time of 24 hours before they are fully effective. It is anticipated that binders would be spray applied through a fire hose or high pressure water cannon; a spray distance of up to 100 feet is assumed. A network of access roadways would be required, estimated to occupy approximately 5 percent of the applied area (approximately 18 acres within the 350 application area). The location of roads would vary depending on the application method for the binder, spray distance, etc. If a spray distance of 100 feet cannot be achieved, the access roadways would occupy a greater percentage of the area. To limit the area of disturbance from roadway construction, it is assumed that fill material will be imported for berm creation (to avoid scraping adjacent areas to build berms). Road base would also be required.

Effectiveness. Soil binders are typically used for roadways and roadway shoulders, and published effectiveness rates often relate to use on roadways with traffic. Specific effectiveness for each of the products over large areas of Owens Lake playa (a dry, periodically high wind area) is unknown. For the 350 acres under consideration, vehicle traffic would be limited; therefore the longevity of the soil binders may be improved as compared with road surface use. Overtime, soil binders tend to break down due to natural weathering. The required frequency of application is unknown. It is anticipated that reapplication would be required after heavy rain events. Air temperature will also limit when binders can be applied.

2010 Product Testing. In August 2010, two test plots (6 ft by 12 ft each, located west of T35S and north of the vegetation and sand near Lizard Tail) were established by HydroBio in sandy and fine-textured soils. The solutions tested were a mix of calcium chloride and a starch polymer, polyacrylamide (PAM). The calcium in the calcium chloride was anticipated to have a greater electrochemical affinity for the sulfate and carbonate ions within the lake bed, while the PAM would bridge and hold the grains together. One test plot was pretreated with 3 mm 1:20 Owens Lake brine. The 1:30 dilution of saturated calcium chloride plus PAM showed the greatest strength overall, the lowest variability and greatest strength at the weak end of the penetration force values. Penetration resistance can be measured with a penetrometer. A penetrometer is inserted through the total crust depth to assess crust resistance. The presence of loose sand grains was identified as a problem for the test plots on sand. Bench testing to refine the formula was recommended. For the purposes of the pilot test, surface preparation of the test plots included breaking up existing crusts (trampling) followed by raking and re-compaction by foot.

Future Pilot Testing. Based on initial investigation in July and August 2012, two areas have been identified as potentially suitable sites for pilot testing of soil binders: playa north of T32-1 and Shallow Flooding on the east end of T23. Ongoing work includes: final selection of test sites, compilation of soil information, development of test protocol, and development of monitoring program. Implementation of the pilot test will be done in coordination with applicable regulators (CSLC, GBUAPCD, CDFW and Regional Board) and is anticipated to begin in spring 2013. The pilot test will examine a topical application (pre-wetting the surface before application) and a blended application (pre-wetting before and after scarification prior to binder application). Scarification will be accomplished by disking or tinning the ground surface with farm equipment (disk, ripper, or rotator). After binder application, the soil will be rowed or disked and then compacted to create a roughly 4-inch solid section of sub-base. For application in culturally sensitive areas, the blended application of soil binders would not protect surface resources.

Soil Binder Testing Results. There are no federal regulations controlling the application of dust suppressants (EPA, 2002). However, there are federal and state guidelines and product pre-certification programs. Additional information from precertification programs is provided for the two example types of soil binders: hygroscopic salts and synthetic polymer emulsions.

<u>Hygroscopic salts</u> - EPA has created the Environmental Technology Verification (ETV) Program to facilitate the deployment of innovative or improved environmental technologies through performance verification and dissemination of information. A field test program evaluated the performance of five dust suppressant products (EPA, 2006). One of these products was a magnesium chloride compound (although not specifically the Cargill Dust-Off identified as a potential product for this alternative). Toxicity testing of the product indicated acute LC50 for survival, chronic LC50 for survival, and chronic EC50 values over 1,000 mg/L for three species (freshwater invertebrate - *Daphnia*, fathead minnow, and mysid shrimp). [EC50 = effective concentration which affects 50 percent of sample population; LC50 = lethal concentration which kills 50 percent of sample population.] The no observed effect concentration (NOEC) was 1,000 mg/L and the lowest observed effective concentration (LOEC) was >1,000 mg/L (EPA, 2006).

<u>Polymers</u> – Under CARB's Precertification Program, manufacturers request that CARB conduct an independent third-party verification of performance claims which focus on the air quality benefits of its equipment or process. Soil-Sement®, a product of Midwest Industrial Supply, is a vinyl acetate polymer that has been precertified under this program. The concentrated form of Soil-Sement® was subjected to the U.S. EPA's Toxicity Characteristics Leaching Procedure (TCLP) which is one of the tests used to assess whether a substance should be handled as a hazardous waste. According to the manufacturer, the results of the inorganics, volatiles, and semivolatiles TCLP tests did not show any detectable levels of regulated chemicals. CARB staff reviewed and verified the test results, which showed no detectable levels of volatiles, semivolatiles, fluoride, or bromide. Soil-Sement® does not contain detectable levels of polycyclic organic matter (POM) which includes polycyclic aromatic hydrocarbons as defined by the Federal Clean Air Act Section 112 (b). As defined by CARB and the U.S. EPA, POM consists of over 100 compounds. POM is defined by the Federal Clean Air Act as organic compounds with more than one benzene ring that have a boiling point greater than or equal to 100 degrees Centigrade. POM can be divided into the subgroups of polycyclic aromatic hydrocarbons (PAHs) and PAH-derivatives. Soil-Sement® does not contain detectable levels of fluorinated or brominated compounds that could be expected to contribute to ozone depletion or global warming. Stratospheric ozone-depleting substances (ODSs) include chlorofluorocarbons (CFC's), hydrochlorofluorocarbons (HCFC's), halons, carbon tetrachloride, and methyl chloroform (CARB, 2011).

CARB has also precertified PennzSuppress® D, a petroleum resin, although this product was not reviewed by LADWP for possible use on Owens Lake.

5.6.2 Impacts

Aesthetics – Under the Avoidance Alternative with Soil Binder, beneficial impacts on aesthetics in the Transition Areas would be the same as under the proposed project. However, approximately 350 acres of the project area would remain as barren playa with a network of access roads to accommodate repeated applications of soil binders. Roadways (raised berms able to accommodate the weight of water trucks) are assumed to be required approximately every 200 feet. The impact on aesthetics from the roadway network would be adverse, but less than significant in the context of other linear features present on the lake as part of the OLDMP. The areas with soil binder applied would darken upon initial application, but are anticipated to appear similar to existing barren playa once dry. The binders are not known to add appreciable color or sheen to the soil surface.

Air Quality and Greenhouse Gases – Soil binders provide soil stabilization and dust control, and are used throughout the U.S. in areas where water is limited. Under the Avoidance Alternative with Soil Binder, temporary construction air pollutant emissions (and greenhouse gas emissions) associated with worker travel, construction equipment, and gravel haul trucks would be reduced as compared to the proposed project by approximately 8 percent. However, additional equipment emissions would result from a few trucks used for the annual application of soil binder. Overall, air pollutant emissions for construction and operation of this alternative would be less than the proposed project.

The efficacy of soil binders for dust suppression is anticipated to vary, based on the product selected, the volume of application, frequency of re-application, and weather conditions between applications. Under the Avoidance Alternative with Soil Binder, approximately 350 acres would be treated with soil binders. Additional testing of soil binder efficacy specifically on Owens Lake is necessary to confirm that this alternative would meet the dust suppression objectives.

Biological Resources – Under the Avoidance Alternative with Soil Binder, land leveling and other earthwork for DCM construction would not occur on approximately 350 acres of the Phase 7a areas. However, the areas would be disturbed by heavy equipment travel (approximately 18 acres of roadways) and application of the soil binders. Hygroscopic salt soil binders are known to negatively impact plant growth and cause defoliation. However, the area where soil binders would be applied is primarily barren playa (**Table 5-3**), and in the environment of Owens Lake, the plant species present are generally salt tolerant. Since binders are usually applied to unvegetated road surfaces or spoil piles, the impact on plant species from synthetic polymer binders is less well known.

Under this Alternative, approximately 100 acres of Managed Vegetation would not be seeded and irrigated. However, the improvement in vegetation conditions and wildlife habitat anticipated with implementation of BACM Hybrid in the Transition Areas would still occur.

Based on initial consultation with CDFW, other issues of concern for soil binders include pooling of the liquid binder material, or pooling of binder mixed with stormwater, and possible ingestion by wildlife (L. Greene, pers. comm., 2012). Proper application to avoid standing pools of liquid binder would avoid this impact. Another potential concern is bioaccumulation of metals, semi-metallic elements (e.g., boron, which is found in some soil binders) or other compounds if present in soil binders. Selection of a binder with no known bioaccumulation hazard and a sampling program to confirm binder contents would address this concern. The effectiveness of the binder over the range of temperatures experienced at the lake is also a concern.

To address outstanding issues, additional mitigation measures have been identified to avoid significant impacts to biological resources for the Avoidance Alternative with Soil Binder. With implementation of these additional measures, and mitigation measures BIO-1 to BIO-5, the impact on biological resources would be less than significant.

Cultural Resources – Under the Avoidance Alternative with Soil Binder, the majority of the area containing 10 known significant cultural resources located in the primary Phase 7a DCAs would not be damaged or destroyed by construction of the project. Since the DCA perimeter berms would be correspondingly reconfigured, the significant cultural sites would also be protected from inadvertent disturbance during operation of the project. However, it is assumed that the maximum application distance of liquid soil binder from a truck is approximately 100 feet. Therefore, roads will be constructed in approximately 5 percent of the area applied with soil binders. The Avoidance Alternative with Soil Binder will require earthwork for road construction in approximately 18 acres of the cultural avoidance area. Road construction is likely to fracture, crush, demolish, and/or relocate cultural materials present in the sites. This would adversely alter archaeological resources determined to be CRHR-eligible, and adversely alter their immediate surroundings, such that the significance of the historical resource would be materially impaired. Construction of a roadway network through large significant cultural sites may also facilitate access by potential artifact looters.

Existing studies and information on the impacts to cultural materials from soil binder application are limited. Concerns include impacts to soil chemistry and structure, and direct impacts to surface resources, if any. The spray application method has the potential to uncover, dislodge and/or relocate surface artifacts. Polymer binders may alter soil pH, making it more alkaline; although impacts to artifacts from relatively minor pH changes are not expected. Soil binders will also alter soil structure, creating larger clumps. If soils are bound together, they can apply more vertical load on a site than the normal soil profile that has fractures in it. Instead of a narrow, vertical soil column applying load to the soil, you have a large block loading the soil profile, thus artifacts can fracture and shear. It is uncertain if soil binders will have adverse effects on archaeological deposits, or if artifacts will remain unaltered and cultural deposits will be sealed and protected from weathering and disturbance.

Once applied, soil binders will adhere to the surface of artifacts, if any are present. Adverse impacts from polymer binders to lithic artifacts are not predicted; although impacts to softer material such as bone are possible. If bone or organic material becomes bound to the soil, it becomes more rigid and cannot move with gentle fluctuations in vertical and horizontal soil movement (such as shrinking and swelling soils); thus, they would be more susceptible to breakdown/fracture, which speeds up weathering and introduction of oxygen.

Soil binders may limit the type of data that could be collected in the future from surface resources. If the binders contain carbonates, they will affect radiocarbon (C14) samples by introducing old or new carbon into the soil system. Impacts to other analyses (obsidian hydration, etc.) are unknown. Polymer binders are likely to adhere to artifacts and the soil, which could make future excavation, screening, and artifact recovery more difficult. Use of soil binders may therefore destroy scientific data and thereby materially impair cultural resources.

The impacts on cultural resources from approximately 18 acres of roadway construction, and the un-quantified impacts from binder application relocated artifacts, binders adhering to resources or indirectly causing fracturing are significant. Since a smaller area and fewer resources would be impacted, the Avoidance Alternative with Soil Binder would have fewer impacts to cultural resources than the originally proposed project, but impacts would still be significant.

To address unknowns, additional mitigation measures have been identified to gather additional information. However, the mitigation (Phase III data recovery over 18 acres of roadways) will adversely impact the integrity of the large CRHR-eligible cultural sites. The soils binders may also adversely impact surface resources in the application area from relocating resources, adherence of binder or soil changes. Even with incorporation of feasible mitigation, the impact on cultural resources of the Avoidance Alternative with Soil Binder would be significant.

However, soil binders may be appropriate on other areas of the lake if significant cultural resources are not present.

Hydrology and Water Quality – Under the Avoidance Alternative with Soil Binder, site specific changes in drainage patterns within select portions of four DCAs would not occur. Issues of concern for use of soil binders include surface runoff carrying suppressants and/or breakdown products or infiltration conveying suppressants to vadose zone and groundwater table. Magnesium chloride and calcium chloride binders would be expected to easily move with water through soils. Elevated chloride concentrations could result; although in the environment of Owens Lake this impact is considered less than significant.

A Caltrans study of seven soil binders used on roadways showed significantly higher measurements for total organic carbon (TOC), biochemical oxygen demand (BOD), calcium (Ca) and magnesium (Mg) than runoff from bare soil, although the "significance of these variations is difficult to ascertain" (Caltrans, 2002). The SWRCB has identified strategies for reducing impacts on storm water from soil binders (SWRCB, 2004):

- Limit Poly-Acrylamide and Copolymer of Acrylamide (PAM) used for erosion control to low slopes for short periods
- Select highest quality PAM for site and soil specific conditions
- Apply appropriate amounts (0.5 to 1 lb of PAM per 1,000 gallons of water) even though manufacturer recommends 3 to 5 lb of PAM, (California Storm Water BMP Handbook)
- Time application of PAM since efficacy progressively declines with each rainfall event
- Require use of non-toxic, biodegradable tackifiers, soil binders and soil stabilizers

- Require environmental and aquatic toxicity data from manufacturer when using brand name products

The soil binders reviewed are water soluble. Where information is provided, the MSDS for the identified soil binders do not note toxicity or eco-toxicity (**Table 5-5**). However, the water quality impacts of some types of soil binders are relatively unknown (UDFCD, 2012). Correspondence with Lahontan Regional Water Quality Control Board was initiated (K. Rubin, pers. comm., 2012a, 2012b). Since available information is incomplete, mitigation measures have been identified to avoid significant impacts to water quality from the Avoidance Alternative with Soil Binder.

Land Use - Under the Avoidance Alternative with Soil Binder, BACM would be installed on approximately 2.6 square miles, soil binders would be applied on approximately 0.5 square miles, 0.2 square miles of T12-1 would be tilled, and 3.4 square miles of existing Shallow Flooding would be transitioned to BACM Hybrid.

5.6.3 Additional Mitigation for Avoidance Alternative with Soil Binder

Implementation of the Avoidance Alternative with Soil Binder would require implementation of the mitigation measures identified for the proposed project. Additionally, if this alternative is adopted, the following mitigation measures shall be implemented to reduce additional impacts associated with soil binders.

Biological Resources

Information on the impacts to biological resources from application of soil binders is limited. Toxicity testing results are not available for all of the binders under review. Therefore, additional mitigation measures (BIO-6 and BIO-7) have been identified to reduce impacts on biological resources to less than significant levels.

BIO-6 Soil Binder Testing Program. A soil binder testing program shall be developed and implemented prior to the use of binders in the cultural resources avoidance areas. The testing program will verify that selected binders are non-hazardous, non-toxic, non-bioaccumulating and biodegradable (toxicity testing for acute and chronic survival for three species; U.S. EPA's Toxicity Characteristics Leaching Procedure). Binders selected for use shall be known to withstand the temperature range of the lake. Only non-hazardous, non-toxic, non-bioaccumulating and biodegradable soil binders shall be used on the cultural avoidance areas. Prior to implementation, the Soil Binder Testing Program shall be reviewed by California State Lands Commission, Lahontan Regional Water Quality Control Board, and California Department of Fish and Wildlife.

BIO-7 Soil Binder Application Protocol. A protocol for soil binder application shall be developed prior to widespread use of binders in the cultural resources avoidance areas. The protocol shall include manufacturer's recommendations for proper storage, transport and use of the soil binder. Application rates, timing relative to rainfall events, and methods to avoid ponding of liquid binder shall be specified.

Cultural Resources

Application of soil binders in portions of four DCAs is anticipated to require road construction (approximately 18 acres of disturbance area) through significant cultural resources sites. Implementation of the following mitigation measures would reduce impacts on cultural resources:

CUL-7 Cultural Resources Phase III Data Recovery. A data recovery plan shall be prepared and implemented by a qualified archaeologist for areas within the significant cultural resources sites that will be disturbed for roadway construction. The archaeologist shall delineate the area for data recovery based on the work area map for roadway construction. The Phase III data recovery program shall include:

- Mapping and systematic collection of surface artifacts, possibly complete data recovery depending on site size
- Subsurface investigation through methods, such as controlled hand-excavation units, machine excavations, deep testing, or a combination of methods; when applicable, other techniques, such as geophysical testing methods may also be used
- Analysis of recovered material through visual inspection, and chemical analysis, when applicable
- Preparation of a report and transmittal of report to Eastern Information Center at the University of California, Riverside; California State Lands Commission; Great Basin Unified Air Pollution Control District; and the Lone Pine Paiute-Shoshone tribe
- Curation of artifact collection, subject to approval by the California State Lands Commission

An archaeological excavation permit shall be obtained from the California State Lands Commission prior to the start of Phase III work. The Lone Pine Paiute-Shoshone tribe shall be contacted prior to implementation of the Phase III data recovery program. A Native American monitor(s) shall be retained to be present on site during the Phase III data recovery activities.

CUL-8 Testing Program to Determine Impacts of Binders on Cultural Artifacts. A qualified archaeologist shall develop and implement a testing program focused on potential impacts of soil binders (from adherence of binder or soil changes) on surface and subsurface cultural resources. Types of soil binders or specific methods of application that best protect cultural resources shall be implemented. The testing program shall be developed in coordination with the Lone Pine Paiute-Shoshone tribe.

Water Quality

WQ-1 Sampling and Analysis Program for Runoff. A sampling and analysis program for runoff from areas applied with soil binder shall be developed and implemented. The sampling and analysis program shall be developed in coordination with the Lahontan Regional Water Quality Control Board and California Department of Fish and Wildlife.

5.6.4 Summary of Impacts After Implementation of Additional Mitigation for Avoidance Alternative with Soil Binder

It is anticipated that with additional testing and monitoring included in Mitigation Measures BIO-6, BIO-7 and WQ-1, impacts to biological resources and water quality would be reduced to less than significant levels for this alternative. Additionally, the Avoidance Alternative with Soil Binder would substantially reduce disturbance to significant cultural resources present on the project site. However, even with mitigation, impacts to cultural resources would be significant under this alternative. Concerns include: application of the soil binder which may uncover, dislodge and/or relocate surface artifacts; adverse impacts to the integrity of the significant cultural sites by data recovery in the application roadway areas; increased access for potential artifact looters; adherence of binder to artifacts and resultant destruction of scientific value; and alteration of soil conditions resulting in artifact fracture.

5.7 WATER SUPPLY PIPELINE - ALTERNATIVE ALIGNMENTS

Two options were originally considered for the pipeline to supply water to T37-2 to facilitate Shallow Flooding and Managed Vegetation. Option A would deliver water from T37-1 to T37-2; Option B – would deliver water from T36-2 to T37-2. Based on the results of soils, cultural and biological resources evaluations, a third option, Option C, was defined which would convey water from T37-1 to T37-2 but via a different route than Option A. **Figure 2-2** depicts the locations of the three options. Either Option B or Option C would avoid known significant impacts to sensitive resources; Option A is no longer under consideration. Other impacts of these alternatives are similar. Final determination of the pipeline alignment will be made based on geotechnical investigations and final design.

5.8 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The following alternatives to the proposed project were evaluated:

- **No Project –** no construction of dust control on 3.1 square miles of Owens Lake and no transition of 3.4 square miles of existing Shallow Flooding to BACM Hybrid

- **Avoidance Alternative –** Construction of the proposed project in all areas except 350 acres where there are known significant cultural resources

- **Expanded Avoidance Alternative -** Construction of the proposed project in all areas except the 350 acres where there are known significant cultural resources and no construction in 60 additional acres identified by the Lone Pine Paiute-Shoshone as culturally sensitive

- **Avoidance Alternative with Soil Binder –** Construction of the proposed project in all areas except 350 acres where there are known significant cultural resources, application of soil binder on approximately 350 acres, and construction of approximately 18 acres of roadways (within the 350 acres)

No Project would avoid the significant un-mitigable impacts of the proposed project on cultural resources, but it would not meet the basic project objective of dust control. Since it would also not increase the vegetated area on Owens Lake or improve the habitat value of the Transition Areas, No Project is not environmentally superior to the proposed project.

The Avoidance Alternative would protect significant cultural resources, increase vegetated area on the lake, improve the habitat value of the Transition Areas, and achieve the emission reductions originally expected in the 2008 SIP. Overall, since it would protect significant cultural resources and achieve the originally expected emission reductions in the SIP, the Avoidance Alternative is environmentally superior to the proposed project.

The Expanded Avoidance Alternative would protect significant cultural resources as well as protect a 60-acre area identified as culturally sensitive by the Lone Pine Paiute-Shoshone. This alternative would increase vegetated area on the lake and improve the habitat value of the Transition Areas. Since it would protect significant cultural resources, the Expanded Avoidance Alternative is environmentally superior to the proposed project. However, this alternative would achieve less of the air quality control objective of the Phase 7a project, as compared to the originally proposed project and other avoidance alternatives. Therefore, overall, the Expanded Avoidance Alternative is not considered environmentally superior to the Avoidance Alternative.

The Avoidance Alternative with Soil Binder would increase vegetated area on the lake, improve the habitat value of the Transition Areas, and meet the project objective of dust control on approximately 3.1 square miles of Owens Lake identified by GBUAPCD as emissive. The Avoidance Alternative with Soil Binder would protect the majority of the significant cultural sites from excavation impacts, but the application method for binders and earthwork for access road construction would significantly impact the integrity of the resources. Pilot testing of potential soil binders would reduce the unknowns associated with this alternative. However, overall, the Avoidance Alternative with Soil Binder would have significant impacts on cultural resources and would require pilot testing to reduce the unknowns associated with impacts to cultural resources, biological resources and water quality. Therefore, based on available information, the Avoidance Alternative with Soil Binder is not environmentally superior to the Avoidance Alternative.

The Avoidance Alternative best meets the project objectives with the least impacts and, therefore, is environmentally superior to the proposed project and to the other alternatives evaluated.

Section 6
Related Projects and Cumulative Impacts

Under CEQA, an EIR must include an evaluation of the cumulative impacts of the project and related projects (State CEQA Guidelines Section 15130). CEQA defines cumulative impacts as “two or more individual effects which, when considered together, are considerable, or which can compound or increase other environmental impacts.”

The significance criterion for cumulative impacts in the State CEQA Guidelines, Appendix G is:

> “Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” is defined here to mean that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)”

The determination of whether a project creates significant direct impacts on the environment, as well as whether the project’s contribution to area-wide impacts is “cumulatively considerable,” is the sole responsibility of the Lead Agency based on substantial evidence.

6.1 RELATED PROJECTS

Section 15130(b) identifies the “list approach” and the “planning scenario approach” for evaluating cumulative impacts. This EIR uses the list approach for closely related past, present and reasonably foreseeable probably future projects with the potential to produce related or cumulative impacts.

6.1.1 Owens Lake Phase 8 Dust Control Measures

The Phase 8 Project expanded the existing system of dust control measures on the lake by installation of 4-inch layer of coarse gravel on 2.03 square miles in the northwest portion of Owens Lake. This project was not required as part of the 2008 SIP attainment strategy. Therefore, LADWP has committed to controlling dust on approximately 45 square miles of Owens Lake, two miles more than the 43 square miles that GBUAPCD stated was required in the 2008 SIP for the OVPA to reach attainment. LADWP adopted a Negative Declaration under CEQA for the project in 2010. CSLC issued a lease amendment (PRC 8079.9, December 2010) for the project. Construction of Phase 8 was completed in 2012.

6.1.2 Owens Lake Dust Mitigation Program – Keeler Dunes

An NOP was distributed for the development of strategies to mitigate dust at the Keeler Dunes (GBUAPD, 2011). The NOP list dust control measures such as establishment and management of native vegetation, wind breaks, and barriers; spraying of the sand with water or other dust-suppressing substances; and placement of gravel with or without an underlying geotextile fabric in selected areas. The preferred control strategy is establishment of native vegetation. The NOP is for a joint EIR/EIS with the Bureau of Land Management. The GBUAPCD Governing Board has not made a determination that Keeler Dunes is an anthropogenic source and needs to be controlled. GBUAPCD has scheduled a workshop on March 7, 2013, to further discuss this issue, and a public hearing is scheduled to take place before the Board in May 2013. Further information is located on GBUAPCD's website, at http://www.gbuapcd.org/keeler dunes/index.htm.

6.1.3 Owens Lake Master Plan

LADWP convened the Owens Lake Planning Committee to collaboratively work to develop a Master Plan for the Owens Lake. The Plan will be a document that identifies a vision, broadly-supported goals, objectives, actions and projects to enhance the Owens Lake bed, including dust mitigation, habitat and wildlife, water efficiency, renewable energy resources, and economic interests. The Plan will build upon concepts and technical information developed during the Conservation Action Plan process and provided within the Owens Lake Habitat Management Plan (OLHMP), as well as other relevant plans and efforts. A dust control water conservation target of 50 percent of the annual water budget is thought to be feasible within the context of the Master Plan and if new or modified BACM are approved.

The Planning Committee consists of members that represent the following interest groups: Agriculture/ Ranchers, Air Quality, Community, Economic/Local Business, Energy/Solar, Environmental (Bird and Native Plants), Governmental (County, State & Tribal), Open Space, Landowners, Public Access, Public Trust, Recreation and Water. Members live throughout the Owens Valley or work in agencies that have jurisdiction in or around the Owens Lake bed. The outcome of this broad stakeholder process will be a collaborative vision for the future of the Owens Lake bed. A Planning Committee Review Draft of the Master Plan has been prepared (December 2011).

6.1.4 Solar Demonstration Project

LADWP proposes to construct and operate a 1 megawatt (MW) solar energy generation demonstration project (Solar Demo) on approximately 5 acres of Owens Lake within the northeast portion of the Phase 8 area (adjacent and just west of Corridor 1). The Solar Demo will provide data to guide future development of solar generation on larger portions of Owens Lake. Solar will be integrated with gravel for dust mitigation. Power generated during operation of the Solar Demo will be interconnect to the direct-buried 4.8kV line directly beneath the existing Corridor 1 gravel road and may be used to supply the power for dust control water pumping.

It is anticipated that solar energy will be generated by photovoltaic solar arrays on the ground. However, LADWP will be soliciting proposal for various types of solar technology, including non-standard designs that address the unique conditions of Owens Lake: corrosive soils, high winds, dust storms, and on-going dust mitigation activities.

Adoption of a CEQA document (anticipated to be a Mitigated Negative Declaration), a lease amendment from CSLC, and other necessary approvals are anticipated to be completed in 2013.

6.1.5 Southern Owens Valley Solar Ranch

LADWP is proposing the Southern Owens Valley Solar Ranch (SOVSR) project within an approximately 3,100-acre area. Three sites are under consideration: northeast of Manzanar and east of the River; northeast of the town of Lone Pine and west of the old train town of Owenyo; and south of the town of Lone Pine, immediately northwest of the Owens Lake. The project is a 200 megawatt (MW) net generating capacity solar energy facility using photovoltaic (PV) panel modules. The solar modules would produce direct current (DC) energy, which would be converted to alternating current (AC) energy usable in the LADWP transmission and distribution system. No new regional transmission lines are anticipated for the proposed project. The objective of the project is to help LADWP meet its commitment to generate 35 percent of its retail electric energy sales from renewable energy resources by the year 2020. In addition to the solar modules, the project includes an electrical substation, operations and maintenance building and development of access roadways. A NOP for an EIR was issued on September 30, 2010. Preparation of the EIR is on-going.

6.1.6 Crystal Geyser Roxane Cabin Bar Ranch Water Bottling Plant Project

Cabin Bar Ranch is located on the east side of Hwy 395, south of the community of Cartago. The Crystal Geyser Roxane project at Cabin Bar Ranch includes construction and operation of a spring water bottling facility and ancillary uses. The project includes a 198,500-square-foot bottling plant with four bottling lines and a 40,000-squarefoot warehouse. Groundwater would be withdrawn from three existing on-site wells perforated in the shallow aquifer underlying the project area at a combined average rate of 170 gallons per minute (gpm) year-round and up to a combined rate of 500 gpm during summer months, for a total of approximately 360 acre-feet per year. Project implementation would require a General Plan Amendment by Inyo County for land use designation changes from Rural Protection (RP) and Rural Residential, High Density (RRH) to Light Industrial (LI); a Zone Reclassification for Zone Changes from Open Space, 40-Acre Minimum (OS-40) and Rural Residential One-Acre Minimum (R-1.0) to Light Industrial (M-2); and a Conditional Use Permit for a water bottling facility within the M-2 zone. Construction would take place in three phases over a number of years, with build-out anticipated in 2025-2027. The Draft EIR states the proposed project would not result in any significant and unavoidable environmental impacts. A Final EIR was prepared for the project in November 2012 and the Inyo County Planning Commission considered the project at their December 13, 2012 meeting.

6.1.7 Lower Owens River Project

The Lower Owens River Project (LORP) was implemented in 2006 to rewet over 60 miles of the Owens River as mitigation for past water exportation in the Owens Valley. The objective of the project was to create and maintain natural habitats in the river through flow and land management actions. In addition to specified baseflows and habitat flows, the project includes maintenance of wetlands habitat in the Owens River delta, enhancement of the Blackrock Waterfowl Habitat Area, and maintenance of specific off-river lakes and ponds.

LORP includes a pump station located between Keeler Bridge and the Lower Owens River Delta. As part of the LORP, minimum flows are releases from the LORP pump station (approximately 6 to 9 cfs on an annual average basis; minimum releases at any time are approximately 3 cfs) for discharge to the Owens River Delta and, depending on conditions, to an area of the lake known as the brine pool transition area. In addition, portions of the seasonal habitat flows (up to approximately 200 cfs ramped up and down over approximately 14 days) are bypassed at the pump station and released towards the Owens River Delta.

6.1.8 Owens Lake Groundwater Evaluation Project

The OLDMP Shallow Flooding and Managed Vegetation DCAs are supplied with LAA and Lower Owens River water, conveyed via the LORP pump station. With the goal of ensuring the future availability of water supply for the DCMs and protecting the environment of Owens Lake, LADWP is studying the potential of using groundwater for a portion of dust suppression activities. Since March 2009, LADWP staff have partnered with the Inyo County Water Department (ICWD), GBUAPCD, and MWH to develop a conceptual and numerical hydrogeological model of the Owens Lake groundwater basin. The Owens Lake Groundwater Evaluation Project (OLGEP) developed a database of relevant groundwater information, formulated a conceptual hydrogeological model, and implemented a field monitoring program (including the drilling of monitoring wells) (MWH, 2012). The conceptual hydrogeological model was based on the extensive previous studies of the Owens Lake groundwater basin and existing geologic and water quality information. The conceptualization characterizes water budget, hydrostratigraphy, depositional history, water quality, aquifer parameters, structural geology, faulting, groundwater levels and flow gradients, springs and seeps, sensitive habitats, and land subsidence. The conceptual model also involves a 3D visualization of the groundwater basin through the importation of lithologic logs into a groundwater modeling system (GMS).

6.2 CUMULATIVE IMPACTS WITH RELATED PROJECTS

The related projects include other dust control activities on Owens Lake, a pump station on the Owens River, solar projects on or near the lake, a Master Plan for projects on the lake, expansion of an existing water bottling plant south of the lake, and a modeling study of the groundwater under the lake.

6.2.1 Aesthetics

The proposed projects listed in **Section 6.1** have the potential to alter aesthetics and views of the lake. Together with Phase 8, the Phase 7a project will create a continuous open expanse of Gravel Cover in the northwest section of the lake. The application of Gravel Cover will alter views of the site; however, the use of gravel from local sources will be consistent in coloration with the Lake bed. The existing network of DCMs on the lake is a highly engineered and managed system. Design of the Phase 7a project will include enhanced habitat areas, recreational amenities, and aesthetic improvements (i.e., meandering edges and transitions to soften the historically straight lines of the berm roads and ponding areas, groupings of boulders, variation in vegetation type and height, variation in rock size and color, etc.). These improvements will improve the visual character of the lake. Overall, the combined visual impact of the proposed project and the related projects is less than cumulatively considerable.

6.2.2 Air Quality

Related projects with construction schedules that overlap with construction of the Phase 7a project have the potential for cumulative air quality impacts. Construction of the Solar Demo project and the Crystal Geyser project may overlap with Phase 7a construction. During any overlap in construction, air pollutant emissions from vehicles and equipment would be emitted from two or more projects. The EIR prepared for the Crystal Geyser project includes six mitigation measures to be implemented during construction to reduce dust emissions (PCR, 2011). Since particulate matter is the only pollutant out of attainment, and since mitigation will be incorporated into all projects to minimize fugitive dust emissions during construction, the impact of equipment and vehicle air pollutant emissions during construction is less than cumulatively considerable.

Operation of the related projects and the Phase 7a project will result in air pollutant emissions from maintenance equipment and vehicles. However, since particulate matter is the only pollutant out of attainment, and since mitigation will be incorporated into projects to minimize fugitive dust emissions during operation, the impact of equipment and vehicle air pollutant emissions during operation is not cumulatively considerable. The operational impact of Phase 7a, Phase 8, solar projects on gravel cover, and other dust mitigation efforts on the lake is cumulatively beneficial regarding reduction of PM_{10} emissions.

Less than cumulatively considerable greenhouse gas emissions from the Phase 7a project are discussed in **Section 4.2**.

6.2.3 Biological Resources

The proposed project would disturb existing areas of Owens Lake, primarily barren playa, and potentially impact wildlife resources during construction. Mitigation measures have been defined in **Section 4.3** to reduce impacts to less than significant levels and the Transition Areas have been designed to increase habitat values in 3.4 square miles of DCAs, consistent with Master Plan habitat goals. Similarly, the OLGEP is focused on defining groundwater pumping alternatives for dust control that are protective of existing habitat. The Solar Demo project is planned for an existing area of Gravel Cover (part of the Phase 8 area) which would minimize impacts on biological resources. For related project that are not yet constructed, it is anticipated that mitigation measures would be incorporated into the projects to reduce impacts on biological resources during construction. Overall, the impact of the proposed project and the related projects on biological resources is less than cumulatively considerable.

6.2.4 Cultural Resources

Projects proposed for Owens Lake and the surrounding area that include ground disturbing activities have the potential to disturb significant cultural resources. Without mitigation, the disturbance to unique historic, archeological, and/or paleontological resources could result in the loss of important information about the prehistoric and historic development in the Owens Lake region.

Significant cultural resources are known for the proposed project areas and other sites on Owens Lake. The proposed Solar Demo project is also located on the Phase 8 parcel. Within the Phase 8 area, archaeological evaluation and data recovery mitigation has been performed at four prehistoric CRHR-eligible archaeological sites. Each of these sites had been exposed by high winds and shifting sands, which suggests this area is culturally sensitive for possibly unidentified prehistoric archaeological resources that may still be buried beneath the ground surface. Therefore, ground disturbing activities for the Phase 7a project, including work on the parcels adjacent to Phase 8, will be monitored for cultural resources.

As described in **Section 4.4**, the Phase 7a project of dust control 3.1 square miles of Owens Lake and 3.4 square miles of dust control on Transition Areas would result in significant impacts on cultural resources. Additional impacts from construction of the related projects together with the cultural resources impacts of the Phase 7a project would be cumulatively considerable. However, implementation of the Phase 7a Avoidance Alternative and the mitigation measures outlined in **Section 4.4**, and mitigation as applicable by future related projects would protect significant impacts on cultural resources. The combined impact of the Phase 7a Avoidance Alternative and related projects would be less than cumulatively considerable.

6.2.5 Hydrology and Water Quality

Construction of the proposed projects identified in **Section 6.1** has the potential to modify drainage patterns on Owens Lake. Construction of berms around DCAs redirects surface flows but flows continue to be directed toward the brine pool. Design features included in the proposed project and to be included in solar projects will direct stormflows in a manner that will minimize the potential for erosion and flooding. While locally altered, the overall drainage pattern on the lake will continue to be towards the brine pool. Pollutant control during construction to avoid contamination of stormwater would be implemented for all projects over 1 acre, in compliance with NPDES Stormwater permitting requirements. Increases in vegetated area, as proposed under the Phase 7a project would reduce surface water runoff. The combined impact of the proposed project and the related projects on drainage patterns and water quality is therefore less than cumulatively considerable.

As noted in **Section 4.5**, the effect of DCMs on groundwater appears to be limited to thin sand layers on the surface of the lake, because DCMs have no apparent effect on deeper aquifer zones. The presence of strong upward vertical gradients and relatively impermeable lake bed clays prohibits water from DCMs migrating downward into deeper aquifers. A review of groundwater level measurements before and after construction of DCMs suggests that water from DCMs is not affecting flow directions or the amount of groundwater in storage in deeper aquifers. This is consistent with the fact that the DCMs are underlain by a large thickness of relatively impermeable clays which effectively isolate them from the deeper groundwater system (MWH, 2011b). OLGEP is a recently (October 2012) completed groundwater study, not a specific project that has been adopted by LADWP. An initial phase of groundwater development and monitoring are recommended, but environmental review of that proposal is pending. Operation of the LORP, including releases from the LORP pump station to the lake would not be altered. The proposed Phase 7a project is essentially water neutral and will not have any adverse impact on groundwater. Overall, the combined groundwater impact of the proposed project and the related projects is less than cumulatively considerable.

6.2.6 Land Use and Recreation

Combined, the Phase 8 and the proposed project (Phase 7a) will result in approximately 3.5 square miles of Gravel Cover on Owens Lake. Cumulatively, these projects will reduce dust emissions, an improvement to public health and safety, and a public trust benefit. Since these projects and the other related projects would not conflict with any applicable land use plan, policy, or regulation, the combined land use impact of the proposed project and the related projects is less than cumulatively considerable.

The Phase 7a project includes limited public access opportunities and recreational amenities such as boardwalks, trails, access berms and visitor overlooks. If additional dust control or solar projects are developed on the lake, these features could be connected to other recreational amenities, as feasible. This would be consistent with the goals of the Owens Lake Master Plan. The draft Master Plan (December 2011) notes that Phase 7a is an example of how the Master Plan framework might be implemented. Overall, the combined impact on recreation of the proposed project and the related projects is less than cumulatively considerable.

Section 7
Additional CEQA Analyses

This section summarizes impact determinations for the proposed project and provides additional environmental analyses required in the State CEQA Guidelines for EIRs.

7.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

Based on the analyses presented in the Initial Study (**Appendix A**) and **Section 4** of this EIR, **Table 7-1** summarizes the potential environmental topics for the project found to have no impacts, beneficial impacts, less than significant impacts, or less than significant impacts where mitigation has been identified to further reduce adverse effects.

Table 7-1
Owens Lake Phase 7a Dust Control Measures Project
Summary of Less Than Significant Impacts

Topic	No Impact	Less than Significant Impact	Less than Significant Impact With Mitigation Identified to Further Reduce Adverse Effects
Aesthetics – scenic vistas and scenic resources		√	
Aesthetics – visual character and light and glare		√	
Agriculture and Forest Resources	√		
Air Quality – Air Quality Plan		√	
Air Quality – odors		√	
Air Quality - construction and maintenance pollutants (except dust)			√
Biological Resources – riparian habitat and wetlands		√	
Biological Resources – policies, ordinances, and habitat plans		√	
Geology and Soils		√	
Greenhouse Gas		√	
Hazards and Hazardous Materials		√	
Hydrology – water quality		√	
Hydrology – groundwater		√	
Hydrology – flooding, runoff, drainage		√	
Land Use and Planning		√	
Mineral Resources		√	

Topic	No Impact	Less than Significant Impact	Less than Significant Impact With Mitigation Identified to Further Reduce Adverse Effects
Noise – project construction and operation		√	
Noise – airport/airstrip areas	√		
Population and Housing		√	
Public Services - fire		√	
Public Services – police, schools, parks, other	√		
Recreation – increased use of parks	√		
Recreation – new facilities		√ (beneficial)	
Traffic – circulation system		√	
Traffic – congestion management program		√	
Traffic – air patterns	√		
Traffic – public transit	√		
Utilities - water, wastewater, solid waste		√	

7.1.1 Mitigation Measures to Further Reduce Less than Significant Effects

Air Quality - With the exception of particulate matter, air pollutant emissions from construction and maintenance vehicles and equipment will be less than significant. Mitigation measures AIR-2 through AIR-5 will be implemented to reduce less than significant construction vehicle and equipment tailpipe emissions to the maximum extent practical, feasible, and available.

AIR-2. Low Emissions Tune-ups Schedule. A schedule of low emissions tune-ups shall be prepared for all equipment operating on site for more than 10 working days.

AIR-3. Low-emission Equipment Utilization. Low-emission equipment/mobile construction equipment shall be used for project construction to the maximum extent practical, feasible, and available.

AIR-4. Low-emission Mobile Vehicle Utilization during Construction. Low-emission or alternative-fueled mobile vehicles shall be used during project construction to the maximum extent practical, feasible, and available. In addition, carpooling of construction workers shall be encouraged.

AIR-5. Low-emission Mobile Vehicle Utilization during Operation. Hybrid, low-emission (CA LEV II; PZEV, SULEV; or ULEV) or alternative-fueled mobile vehicles, such as electric or fuel cells, shall be used for the proposed project site to the maximum extent practical, feasible, and available. In addition, carpooling of operations and maintenance workers shall be encouraged.

7.2 POTENTIALLY SIGNIFICANT IMPACTS MITIGATED TO LESS THAN SIGNIFICANT LEVELS

7.2.1 Air Quality

PM_{10} emissions would result from construction and maintenance activities required to implement DCMs at Owens Lake. Construction activities will generate PM_{10} emissions due to surface disturbance, creation of berms, travel of vehicles and construction equipment on unpaved surfaces, and material handling of gravel for those areas that will use gravel installation for dust control. Mitigation Measure AIR-1 will reduce dust emissions during construction and maintenance activity to less than significant levels.

AIR-1. Fugitive Dust Emissions Control and Minimization. In compliance with GBUAPCD Abatement Order 110317-01, a Dust Control Plan will be implemented during construction. For the Transition Areas, the plan will specify measures to be taken when removing existing DCAs from service. Best available control measures shall be implemented during construction and maintenance activities to minimize emission of fugitive dust from earthwork and travel on unpaved roads and other areas. Best available control measures may include, but would not be limited to:

- Temporary sand fences shall be installed where feasible as soon as practicable without delaying project completion and shall be maintained as necessary until areas of Managed Vegetation have been established
- Water trucks shall be used as necessary and feasible during construction
- Tillage shall be implemented where soil conditions allow
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor
- Construction activities shall cease during high wind events

At a minimum, one or more of the applicable best available control measures shall be used during active operations to minimize fugitive dust emissions from each fugitive dust source type.

7.2.2 Biological Resources

Mitigation Measures BIO-1 through BIO-4 were described in the 2008 SIP SEIR (GBUAPCD, 2008b) for the 15.1 square miles of DCMs proposed under that project. These measures are still relevant to the Phase 7a project areas. Mitigation Measure BIO-5 will reduce impacts on other nesting birds, if any are present during construction or maintenance of the Phase 7a project. To reduce impacts to biological resources to a less than significant level, the following mitigation measures shall be implemented.

BIO-1. Lake Bed Worker Education Program. To minimize potential direct impacts to Snowy Plover from construction activities, LADWP shall continue the lake bed worker education program consistent with the previous approach and per CDFW recommendations. The program shall be based on Snowy Plover identification, basic biology and natural history, alarm behavior of the snowy plover, and applicable mitigation procedures required of LADWP and construction personnel. The program shall be conducted by a biologist familiar with the biology of the Snowy Plover at Owens Dry Lake and familiar with special status plant and wildlife species of the Owens Lake basin. The education program shall explain the need for the speed limit in the snowy plover buffer areas and the identification and meaning of buffer markers. All construction, operation, and maintenance personnel working within the project area shall complete the program prior to their working on the lake bed. A list of personnel who have completed the education program shall be maintained and made available to GBUAPCD upon request.

BIO-2. Preconstruction Surveys for Snowy Plover. To minimize potential direct impacts to Snowy Plover within the project area due to construction activities, LADWP shall conduct a preconstruction survey for Snowy Plover in all potential snowy plover habitat prior to any construction activity that is performed during the Snowy Plover breeding season (March 15 to August 15). Preconstruction surveys shall be performed no more than 7 days prior to the start of ground-disturbing activities. A 200-foot buffer shall be placed around all active snowy plover nests that are discovered within the construction area. This buffer shall protect the plover nest from both destruction and construction noise. Green-colored stakes of less than 60 inches in height shall be used to mark buffer edges, with stakes spaced at approximate cardinal directions. The location of the nest (global positioning system coordinates) and current status of the nest shall be reported within 24 hours of discovery to GBUAPCD. Maps of snowy plover nest locations shall be posted at the construction office and made available to all site personnel and GBUAPCD staff. The activity of the nest shall be monitored by a biological monitor, as per existing guidelines for the North Sand Sheet and Southern Zones dust control projects and any revisions to the monitoring protocol that have been approved by CDFW. Active snowy plover nests shall be monitored at least weekly. The nest buffer shall remain in place until such time as the biological monitor determines that the nest is no longer active and that fledglings are no longer in danger from proposed construction activities in the area. Buffers shall be more densely marked where they intersect project-maintained roads. Vehicles shall be allowed to pass through nest buffers on maintained roads at speeds less than 15 miles per hour, but shall not be allowed to stop or park within active nest buffers. Permitted activity within the nest buffer shall be limited to foot crews working with hand tools and shall be limited to 15-minute intervals, at least one hour apart, within a nest buffer at any one time.

BIO-3. Snowy Plover Nest Speed Limit. To minimize potential direct and cumulative impacts to Snowy Plover and other sensitive biological resources from vehicles construction activities, LADWP shall implement a speed limit of 30 miles per hour within all active construction areas on Owens Dry Lake during construction of dust control measures. Speed limits shall be 15 miles per hour within active snowy plover nest buffers. Designated speed limits for other construction areas outside of active nest buffers shall be maintained at 30 miles per hour where it is determined to be safe according to vehicle capabilities, weather conditions, and road conditions. Site personnel and GBUAPCD staff shall be informed daily of locations where active nest buffers overlap with roads in the construction area. Signs shall be posted that clearly state required speed limits. Speed limit signs shall be posted at all entry points to the lake. The number of speed limit signs shall be kept at a minimum near active snowy plover nest areas to reduce potential perches for raptors and other snowy plover predators and shall be outfitted with

Nixalite or the functional equivalent if greater than 72 inches (increased from the original 60 inches) in height at entry points to the lake and 60 inches in height by active snowy plover nest areas.

BIO-4. Lighting Best Management Practices. To minimize indirect impacts to nesting bird species associated with project lighting during construction activities, LADWP shall institute all best management practices to minimize lighting impacts on nocturnal wildlife consistent with previous requirements and CDFW recommendations. Best management practices include those listed below, and are included in the Project Description of the GBUAPCD 2008 State Implementation Plan Subsequent Environmental Impact Report. Previous construction has occurred during nighttime hours to complete construction schedules and to prevent personnel from working during times of high temperatures. If night work is deemed necessary, then construction crews shall make every effort to shield lighting on equipment downward and away from natural vegetation communities or playa areas, and especially away from known nesting areas for snowy plovers during the nesting season (March to August). All lighting, in particular any permanent lighting, on newly built facilities shall be minimized to the greatest extent possible, while still being in compliance with all applicable safety requirements. Required lighting shall be shielded so that light is directed downward and away from vegetation or playa areas.

BIO-5. Preconstruction Surveys for Nesting Birds. If tree or shrub removal activities are scheduled to occur during the bird breeding season (January 15 to July 31), pre-construction surveys for bird nests shall be conducted no more than 7 days prior to the start of ground-disturbing activities. Surveys shall be conducted in areas of suitable nesting habitat that will be impacted by construction. Active nests will be marked at a safe distance with visible flagging and the construction crew supervisor will be made aware of these locations. Construction may commence in all areas without active bird nests. All bird nests will remain undisturbed while they are active. After a nest ceases to be active (fledges or fails), and the qualified biologist has made this determination, construction may proceed in the area. If construction is initiated in one breeding season and persists into subsequent breeding seasons, additional surveys are not necessary unless construction activities involve additional tree or shrub removal.

7.2.3 Transportation and Traffic

Impacts on transportation and traffic were found to be less than significant with the exception of increased traffic hazards from truck travel during project construction (**Appendix A**). Mitigation measures Trans-1 and Trans-2 will be implemented to reduce impacts on traffic hazards to less than significant levels:

Trans-1. LADWP shall develop and implement a Traffic Work Safety Plan to be approved by Caltrans for the construction phase of the Phase 7a project. The Plan will address the use of warning lights, signs, traffic cones, signals, flag persons and/or comparable measures as needed to maintain safe travel of haul trucks across SR 136 during construction.

Trans-2. LADWP shall repair damage to SR 136 in the areas near the mines where project related truck traffic crosses SR 136. Prior to the start of construction activity, existing conditions at the crossings will be documented. After construction of Phase 7a is complete, physical damage documented at the SR 136 crossings will be repaired.

7.3 SIGNIFICANT ENVIRONMENTAL IMPACTS FOR WHICH NO FEASIBLE MITIGATION IS AVAILABLE

7.3.1 Cultural Resources

Construction of the original Phase 7a project would significantly impact CRHR-eligible cultural resources located in the Phase 7a project areas. Implementation of a Phase III data recovery program for the significant cultural resources sites located in the Phase 7a DCAs is not identified as feasible mitigation for the project. Implementation of mitigation measures CR-1 to CR-6 would protect three of the known archaeological sites as well as unevaluated and inadvertently discovered cultural resources, but the portions of the CRHR-eligible sites that overlap with project construction areas in DCAs would still be significantly adversely impacted. Therefore, there is no feasible mitigation to reduce significant impacts on cultural resources for the Phase 7a Project as originally defined (3.1 square miles of dust control). Therefore, alternatives to the original Phase 7a project were reviewed.

7.4 ALTERNATIVES TO THE PROPOSED PROJECT

The following alternatives to the proposed project were evaluated:

- **No Project** – no construction of dust control on 3.1 square miles of Owens Lake and no transition of 3.4 square miles of existing Shallow Flooding to BACM Hybrid
- **Avoidance Alternative –** Construction of the proposed project in all areas except 350 acres where there are known significant cultural resources
- **Expanded Avoidance Alternative** - Construction of the proposed project in all areas except the 360 acres where there are known significant cultural resources and no construction in 60 additional acres identified by the Lone Pine Paiute-Shoshone as culturally sensitive
- **Avoidance Alternative with Soil Binder –** Construction of the proposed project in all areas except 350 acres where there are known significant cultural resources, application of soil binder on approximately 350 acres, and construction of approximately 18 acres of roadways (within the 350 acres)

7.4.1 Environmentally Superior Alternative

The Avoidance Alternative would protect significant cultural resources, increase vegetated area on the lake, improve the habitat value of the Transition Areas, and achieve the emission reductions originally expected in the 2008 SIP. The Avoidance Alternative would meet the project objectives with the least impacts and, therefore, is environmentally superior to the originally proposed project and to the other alternatives evaluated.

Implementation of the Avoidance Alternative and the following mitigation measures would reduce impacts on cultural resources to less than significant levels:

CR-1. Avoidance of resources immediately adjacent to the Phase 7a Project Area to the extent feasible – using a 100-foot buffer around archaeological sites

Construction activities and heavy vehicle travel could inadvertently damage intact portions of cultural resources adjacent to the various Phase 7a project areas. A qualified archaeologist shall prepare maps depicting archaeological sites with a 100-foot buffer as environmentally sensitive areas. These maps shall be available for cultural resources monitors and construction crews to use during all construction activities and vehicle transportation through the Phase 7a Project Area.

CR-2. Cultural Resources Construction Monitoring Program

Impacts to surface and subsurface cultural resources not previously identified shall be mitigated through preparation of a cultural resources monitoring plan and its implementation during construction or other ground-disturbing activities. The Cultural Resources Construction Monitoring Program shall include:

- The retention of a qualified archaeologist to implement a monitoring and recovery program. A "qualified archaeolologist" should meet the U. S. Secretary of the Interior's Historic Preservation Professional Qualification Standards for Archaeology. The qualifications of the archaeologist shall be submitted to the responsible agency (CSLC) for approval.

- The Lone Pine Paiute-Shoshone tribe shall be contacted prior to the start of project construction. Qualified Lone Pine Paiute-Shoshone cultural resources monitors shall be afforded an opportunity to be present during earthwork and excavation activities associated with construction of the Phase 7a project.

- The qualified archaeologist shall be required to secure a written agreement with a recognized museum repository, such as the University of California, Riverside, regarding the final disposition and permanent storage and maintenance of any unique archaeological resources or historical resources recovered as a result of the archaeological monitoring, as well as corresponding geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage.

- LADWP shall require the qualified archaeologist to provide cultural resources awareness training prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique archaeological resource, historical resource, or human remains are encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified archaeologist will also prepare and distribute informative Fact Sheets regarding archaeological and Native American sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the archaeologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The qualified archaeologist shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in T1A-3, T1A-4, T32-1, T37-1, and T37-2, as well as in the Phase 8 project area for installation of the water supply pipeline to T37-2. Monitors will move among construction locations as directed by the cultural resources manager and in consultation with the Construction Contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils will not require monitoring. DCA parcel T12-1 and the Transition Areas (T1A-2_a, T28N, T28S, T30-1, T36-1_b, T35-1, and T35-2) were previously disturbed for prior phases of the dust control project. In those areas, it will be up to the discretion of the archaeological monitor, to determine which areas will require monitoring and how frequently. The archaeologist shall coordinate with the construction manager to divert work around the discovery of any potentially significant archaeological resource, if any are encountered. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP and the qualified archaeologist.

- If construction personnel discover a cultural resource in the absence of an archaeological monitor, construction shall be halted within 100 feet of the find, and a qualified archaeologist shall be contacted to make an immediate evaluation of significance and recommend appropriate treatment of the resource. If the resource is determined to be significant, the qualified archaeologist shall prepare and implement a treatment plan in consultation with LADWP. Construction will not recommence in the area until authorized to do so by LADWP and the qualified archaeologist.

- The qualified archaeologist shall ensure that all construction personnel shall be informed of the requirements to notify the Inyo County coroner within 24 hours of the discovery of human remains on state lands (as required by Public Resources Code 5097).

- The qualified archaeologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including tribal representatives, and the results of monitoring, including the recovery of archaeological resources, sketches of recovered materials, and associated geographic site data. Within 120 days of the completion of the archaeological monitoring, a monitoring report shall be submitted to LADWP, CSLC, and to the Eastern Information Center at the University of California, Riverside. The report, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to unique archaeological resources or historical resources.

CR-3. Avoidance of Unevaluated and Other Resources

A qualified archaeologist shall prepare maps delineating archaeological sites 7A-117 and CA-INY-6660 and CA-INY-8918 plus a 100-foot buffer around each of the sites. No earthwork or vehicle travel shall occur in these sites or the buffer areas during Phase 7a construction or maintenance activities. Construction activities in the vicinity of these sites shall be monitored by an archaeological monitor.

CR-4. Unevaluated Resources on the Access Roadway

A qualified archaeologist shall compare the work area map for the access roadway with the locations of known cultural resources. Cultural resources sites that overlap with the work area map that cannot be avoided shall be evaluated as part of a Phase II archaeological investigation prior to ground disturbances in the area (CEQA Sections 21083.1 and 21083.2). If determined to qualify as CRHR-eligible sites, the roadway shall be re-designed to avoid the resources to the maximum extent feasible. The Lone Pine Paiute-Shoshone tribe shall be consulted during the re-design process. Where re-design is infeasible, a Phase III data recovery investigation, or other appropriate measures, for the portions of any CRHR-eligible sites that would be disturbed by roadway improvement shall be conducted (CEQA Section 21083.2).

Relevant archaeological investigation and/or excavation permits shall be obtained from the California State Lands Commission prior to the start of Phase II and/or Phase III work. The Lone Pine Paiute-Shoshone tribe shall be contacted prior to implementation of Phase II and/or Phase III work and qualified tribal monitors shall be afforded an opportunity to be present during cultural resources investigations for the access roadway.

CR-5. Unanticipated Discovery of Human Remains on State Lands

Upon the discovery of human remains, there shall be no further excavation or disturbance of the site or any areas that are reasonably suspected to overlie adjacent human remains until the following conditions are met:

- The Inyo County Coroner has been informed and has determined that no investigation of the cause of death is required.
- If the remains are of Native American origin, the Native American Heritage Commission (NAHC) will be contacted. In consultation with the Most Likely Descendant, the NAHC and qualified archaeologist shall determine the treatment and disposition of the human remains and any associated grave goods, with appropriate dignity, as provided in Public Resources Code Section 5097.98.
- If the remains are not of Native American origin, the Inyo County Coroner will make a determination as to the disposition of the remains.

Ground-disturbing activities may continue once compliance with all relevant sections of the California Health and Safety Code have been addressed and authorization to proceed issued by the Inyo County Coroner, LADWP, and the qualified archaeologist.

CR-6. Paleontological Resources Construction Monitoring Program

Impacts to surface and subsurface paleontological resources not previously identified shall be mitigated through preparation of a written paleontological monitoring plan to be implemented during construction ground-disturbances, including trenching, grading, and other earth-moving activities. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. LADWP shall require that construction monitoring, salvage, and recovery of unique paleontological resources is consistent with standards for such recovery established by the Society of Vertebrate Paleontology (SVP). The Paleontological Resources Construction Monitoring Program shall include:

- LADWP shall retain a qualified paleontologist to implement the mitigation plan and maintain professional standards of work. A “qualified paleontologist” is defined as a practicing scientist who meets the qualifications established by the SVP. The qualifications of the paleontologist shall be submitted to the responsible agency (CSLC) for approval.

- The qualified paleontologist shall be required to secure a written agreement with a recognized repository, regarding the final disposition, permanent storage, and maintenance of any significant fossil remains and associated specimen data and corresponding geologic and geographic site data that might be recovered as a result of the specified monitoring program. The written agreement shall specify the level of treatment (i.e., preparation, identification, curation, cataloging, etc.) required before the collection would be accepted for storage. In addition, a technical report shall be completed. The final disposition of paleontological resources recovered on State lands must be approved by the CSLC.

- The paleontological monitor may be a qualified paleontologist or a cross-trained archaeologist or geologist working under the supervision of a qualified principal paleontologist. The function of the monitor is to identify potential resources and recover them with appropriate scientific data.

- LADWP shall require the qualified paleontologist to provide a paleontological resources briefing prior to the start of construction for all construction personnel. Construction personnel shall be briefed on procedures to be followed in the event that a unique paleontological resource is encountered during construction. A training log shall be kept on-site throughout the construction period. The qualified paleontologist will also prepare and distribute informative Fact Sheets regarding paleontological sensitivities that provide samples of possible finds and procedures to be followed in the event of a discovery. The Fact Sheet will also have relevant contact information for the paleontologist, including a telephone number where they can be reached by the construction contractor, as necessary.

- The paleontological monitor shall monitor ground-disturbing activities, including trenching, grading, and other earth-moving activities, in the Phase 7a project area. Monitors will move among construction locations as directed by the project cultural resources manager and in consultation with the Construction Contractor. Backfilling and removal of previously constructed berms composed of previously disturbed soils would not require monitoring. The monitor shall coordinate with the construction manager to divert work around potentially significant paleontological resources, if any are encountered. Prior to the resumption of ground-disturbing activities in the immediate vicinity of the paleontological resources, LADWP shall provide the monitor with the necessary resources to identify and implement a program for the appropriate disposition.

- Discovery of fossil-producing localities shall require that stratigraphic columns be measured and that geologic samples be taken for analysis.

- If fossil localities are discovered, the paleontologist shall collect controlled samples for processing. All fossils recovered shall be prepared, identified, and cataloged before donation to the accredited repository designated by the lead agency.

- In conjunction with the subsurface work, the paleontological monitor shall inspect exposed sediments, including microscopic examination of matrix, to determine if fossils are present. In addition, the qualified paleontologist shall be available on call to respond to unanticipated discoveries.

- If construction personnel discover a paleontological resource in the absence of a paleontological monitor, construction shall be halted and a qualified paleontologist shall be contacted to make an immediate evaluation of significance and recommend appropriate treatment of the resource. If the material is determined to be significant, the qualified paleontologist shall prepare and implement a treatment plan in consultation with LADWP. Construction activity shall not resume until authorization has been provided by LADWP and the qualified paleontologist.

- The qualified paleontologist shall maintain daily monitoring logs during ground-disturbing activities that shall be submitted weekly to LADWP. A complete set of the daily monitoring logs shall be kept on site throughout the ground-disturbing activities and be available for inspection. The daily monitoring log shall indicate the area monitored, the date, assigned personnel including the tribal representative, and the results of monitoring, including the recovery of paleontological resources, sketches of recovered materials, and associated geographic site data. Within 120 days of the completion of the paleontological monitoring, a final mitigation report shall be submitted to LADWP, and CSLC with an appended, itemized inventory of the specimens observed and collected. The report should include a list of specimens recovered, documentation of each locality, interpretation of fossils recovered and any technical or specialist's reports as appendices. The report and inventory, when submitted to LADWP, shall signify the completion of the program to mitigate impacts to paleontological resources.

7.5 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

As described in **Section 4.4**, the Phase 7a project as originally proposed (3.1 square miles of dust control) would have significant irreversible impacts on unique cultural resources. Therefore, an alternative to the originally proposed project has been defined. With implementation of mitigation measures, the Avoidance Alternative will have less than significant impacts on cultural resources.

Construction of the project will require the use of heavy equipment, workers' vehicles, and gravel hauling trucks. The equipment and vehicles will consume nonrenewable fossil fuels for the length of construction, and during the life of the project for maintenance. The objective of the project is to implement dust control measures on Owens Lake to meet regulatory dust control requirements without increasing water commitments while maintaining existing habitat, improving aesthetics, providing safe limited public access, preserving cultural resources, and utilizing existing infrastructure and vegetation. Overall, since the project would improve environmental conditions in the area, the benefits of the project justify the use of irreplaceable resources (fossil fuels) and the irreversible environmental changes associated with the project will be less than significant.

With implementation of the Avoidance Alternative and identified mitigation measures, there will be no significant irreversible environmental changes associated with the Phase 7a project.

7.6 GROWTH-INDUCING IMPACTS

The CEQA Guidelines Section 15126.2(d) require that an EIR identify:

- The ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly in the surrounding environment

- Obstacles to growth removed by the project

- Characteristics of the projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively

The proposed project does not involve construction of new homes or businesses and does not include construction of new, potentially growth-inducing, infrastructure such as potable water or wastewater systems. The project will expand the existing system of DCMs on Owens Lake for the improvement of air quality. Infrastructure associated with the OLDMP does not foster population growth. Therefore, the project will not be directly or indirectly growth-inducing related to expansion of infrastructure systems.

Depending on project construction phase, the project will require approximately 50 to 150 construction workers on Owens Lake for a minimum of 18 months. It is anticipated that these workers would frequent businesses in the project area during this period. However, due to the limited number of workers required and the temporary nature of construction, the impact on economic growth is less than significant. Operation of the project will require approximately five additional workers over existing operations and maintenance staff. The impact on economic growth is less than significant.

Section 8
References, Acronyms and Preparers

This section includes references used during preparation of the EIR, and acronyms and abbreviations used in the document. Preparers of the EIR are also listed.

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<u>Native American Tribal Representatives</u>
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8.3 ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
A.D.	Anno Domini
afy	acre-feet per year
AQMP	Air Quality Management Plan
ASTM	American Society for Testing and Materials
ATSAC	Automated Surveillance and Control
BACM	Best Available Control Measure
BLM	Bureau of Land Management
BMPs	Best Management Practices
BOD	Biochemical Oxygen Demand
B.P.	Before Present
ca.	Circa
Ca	Calcium
C&C	Carson and Colorado Railroad Company
CAA	Clean Air Act
CAAA	California Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal/EPA	California Environmental Protection Agency
CA LEV II	California Low Emission Vehicle II
CARB	California Air Resources Board
CARV	Combination Air Vacuum Release Valve
CCR	California Code of Regulations

CDCAP	California Desert Conservation Area Plan
CDFG	California Department of Fish and Game (now California Department of Fish and Wildlife)
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	Chlorofluorocarbon
cfs	cubic feet per second
CH_4	methane
CH	Critical Habitat
CIWMB	California Integrated Waste Management Board
cm	centimeters
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2-e	carbon dioxide equivalent
CR	California Rare
CRHR	California Register of Historic Resources
CSC	California Species of Special Concern
CSCU	Controlled Surface Collection Units
CSLC	California State Lands Commission
CUPA	Certified Unified Program Agency
CV	Control Valve
CWA	Clean Water Act
dBA	Decibel, A-weighted scale
DCA	Dust Control Area
DCM	Dust Control Measures
EC	Electrical Conductivity
EDR	Environmental Data Resources, Inc.
EIC	Eastern Information Center

EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ETV	Environmental Technology Program
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
°F	degrees Fahrenheit
FAC	Facultative
FACW	Facultative Wetland
FC	Listed as candidate under the federal Endangered Species Act
FE	Federal Endangered Species
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
FPS	Federally Protected Species
ft	Feet
FT	Listed as threatened under the federal Endangered Species Act
GANDA	Garcia and Associates
GC	Gravel Cover
GHG	Greenhouse Gas
FSEIR	Final Subsequent Environmental Impact Report
GBUAPCD	Great Basin Unified Air Pollution Control District
GMS	groundwater modeling system
gpm	gallons per minute
HCFC	Hydrochlorofluorocarbons
HCP	Habitat Conservation Plan
HDPE	High Density Polyethylene
HFC	hydrofluorocarbons
HFE	hydrofluorinated ethers
hp	horsepower
H_2S	hydrogen sulfide
HSC	(California) Health and Safety Code
HSM	Habitat Suitability Model
Hwy	Highway
Hz	hertz

I	Interstate
IDC	Inyo Development Company
IS	Initial Study
km	Kilometer
KV	Kilovolt
LAA	Los Angeles Aqueduct
LADWP	(City of) Los Angeles Department of Water and Power
lbs	pounds
LC	Local Concern
Ldn	day/night noise level
Leq	equivalent noise level
LGP	Low Ground Pressure
LOEC	Lowest Observed Effective Concentration
LORP	Lower Owens River Project
LOS	Level of Service
LST	Localized Significance Threshold
LGP	Low Ground Pressure
M&R	Moat and Row
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MDCE	minimum dust control efficiencies
Mg	Magnesium
Mg/kg	Milligrams per kilogram
Mg/L	Milligrams per liter
MMRP	Mitigation Monitoring and Reporting Program
MMT	million metric tons
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
mS/cm	milliSiemens per centimeter
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
MVN	Managed Vegetation
MW	Megawatt

NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NF_3	nitrogen trifluoride
NHPA	National Historic Preservation Act
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_3	nitrate
NO_x	Oxides of Nitrogen
NOEC	No Observed Effect Concentration
NOP	Notice of Preparation
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NSPC	Natural Soda Products Company
O_3	ozone
OBL	Obligate
OBWS	Owens Basin Wetland and Aquatic Species
ODSs	Ozone-Depleting Substances
OEHHA	(California) Office of Environmental Health Hazard Assessment
OLDMP	Owens Lake Dust Mitigation Program
OLGEP	Owens Lake Groundwater Evaluation Project
OLHMP	Owens Lake Habitat Management Plan
OPR	(Governor's) Office of Planning and Research
OVPA	Owens Valley Planning Area
PAH	Polycyclic Aromatic Hydrocarbons
PAM	Polyacrylamide
Pb	lead
PCE	Passenger Car Equivalent
PCE	tetrachloroethylene
PE	Proposed to be listed as endangered under the federal Endangered Species Act
PFC	perfluorocarbons
PIT	Pressure Indicating Transmitters
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter

PM_{10}	particulate matter 10 microns or less in diameter
POM	Polycyclic Organic Matter
ppm	parts per million
PRV	Pressure Reducing Valve
PT	Proposed to be listed as threatened under the federal Endangered Species Act
PV	Photovoltaic
PZEV	Partial Zero-Emission Vehicle
ROG	reactive organic gases
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board (Regional Board)
SB	Senate Bill
SC	Special Concern
SCAB	South Coast Air Basin
SCADA	Supervisory Control And Data Acquisition
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coast Information Center
SCR	Supplemental Control Requirement
SE	Listed as endangered by the State of California
SF_6	sulfur hexafluoride
SFL	Shallow Flooding Lateral
SFP	Shallow Flooding Pond
SHPO	State Office of Historic Preservation
SIP	State Implementation Plan
SIV	Suitability Index Value
SMARA	(California) Surface Mining and Reclamation Act
SNA	Significant Natural Areas
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOP	Standard Operating Procedure
SOVSR	Southern Owens Valley Solar Ranch
S.P.	Southern Pacific Railway
SPCC	Spill Prevention Control and Countermeasure

Sq mi	Square Mile
SR	State Route
SR	State Listed Rare Species
SSC	Species of Special Concern
ST	Listed as threatened under the State of California
STC	Sound Transmission Class
STLC	Soluble Threshold Limit Concentration
STPs	Shovel Test Pits
SULEV	Super Ultra-low Emission Vehicle
SVP	Society of Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
TAC	Toxic Air Contaminants
TAM	Transmontane Alkali Meadow
TCE	trichloroethylene
TSP	Total Suspended Particulates
TL	Tillage
TTLC	Total Threshold Limit Concentration
µg/m3	micrograms per cubic meter
ULEV	Ultra-low Emission Vehicle
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UV	Ultraviolet
UWMP	Urban Water Management Plan
V/C	volume-to-capacity (ratio)
VAC	Volt Alternating Current
VOC	Volatile Organic Compound
vph	vehicles per hour
WDR	Waste Discharge Requirements
WL	Watch List

8.4 GLOSSARY OF CULTURAL RESOURCES TERMS

Historic debris – a grouping of historic-era trash, such as bottles, broken glass, ceramics, metal, or structural items.

Isolates –Fewer than ten artifacts discovered within a 10-by-10-meter area that appears to reflect a single event, loci, or activity.

Lithic tools – stone artifacts such as projectile points (arrowheads), scrapers, and knives.

Lithic scatter – chipped stone debris dispersed throughout an area.

Multicomponent site – a site containing artifacts of both prehistoric and historic origin.

Rock feature – arrangements of rock that form a pattern, such as rock piles or rock alignments.

Tabular concentration (clusters) – a grouping of thin lithic artifacts, slightly ovoid in shape with flat surfaces, and usually sharpened along the edges.

8.5 PREPARERS OF THE ENVIRONMENTAL IMPACT REPORT

Prepared by:

Los Angeles Department of Water and Power
Environmental Services
111 North Hope Street, Room 1044
Los Angeles, California 90012

EIR Project Management
Mark Sedlacek, Director of Environmental Affairs
Charles C. Holloway, Manager of Environmental Planning and Assessment
Laura Hunter, Environmental Project Manager

Project Design
Owens Lake Regulatory Compliance & Planning Water Operations
William Van Wagoner, P.E., Owens Lake Dust Mitigation Program Manager
Nelson O. Mejia, P.E., Phase 7a Project Manager
Louis Rubalcaba, P.E., Phase 7a Design Manager

Biological Resources
Jeff Nordin, Watershed Resources Specialist
Lori Dermody, Watershed Resources Specialist

Owens Lake Operations and Cultural Resources
Erica Blyther, REHS, Environmental Supervisor
Raymond Ramirez, Environmental Specialist

Technical Assistance Provided by:

MWH Americas, Inc.
618 Michillinda Avenue, Suite 200
Arcadia, California 91007

Sarah Garber, PMP, CPP
Project Manager
Over 23 years of experience in the preparation of CEQA and NEPA documents

Janet Fahey, D.Env., P.E.
Technical Reviewer
Over 35 years of experience in the environmental impact analysis and water resources planning

David Ringel, P.E.
Hydrology
Over 35 years of experience in water resources planning and engineering

Jackie Silber, GISP
GIS Professional
Over 12 years of experience in mapping

Garcia and Associates (GANDA)
Cultural Resources
Carole Denardo, RPA, Cultural Resources Manager
Rachael Greenlee, RPA, Staff Archaeologist
Matthew Steinkamp, RPA, Staff Geoarchaeologist and Senior Paleontologist

Scientific Resources Associated
Air Quality Assessment
Valorie Thompson, Ph.D.

Appendix A

Notice of Preparation and Initial Environmental Study

Initial Study

for

Owens Dry Lake
Phase 7a Dust Control Measures

Los Angeles Department of Water
Environmental Services
111 North Hope Street, Room 1044
Los Angeles, CA 90012

May 2011

CEQA Initial Study

Owens Dry Lake Phase 7a Dust Control Measures

May 2011

General Manager
Ron Nichols

Senior Assistant General Manager – Sustainability Programs and External Affairs
Lorraine A. Paskett

Director of Environmental Affairs
Mark J. Sedlacek

Manager of Environmental Planning and Assessment
Charles C. Holloway

Prepared by:

Los Angeles Department of Water and Power
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Technical Assistance Provided by:

MWH Americas, Inc.
618 Michillinda Avenue, Suite 200
Arcadia, California 91007

Los Angeles LA DWP Department of Water and Power

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Section 1
Project and Agency Information

1.1 PROJECT TITLE AND LEAD AGENCY

Project Title:	Owens Dry Lake Phase 7a Dust Control Measures
Lead Agency Name:	Los Angeles Department of Water & Power
Lead Agency Address:	111 North Hope Street, Room 1044 Los Angeles, California 90012
Contact Person:	Mr. Charles Holloway
Contact Phone Number:	(213) 367-0285
Project Sponsor:	Same as Lead Agency

1.2 PROJECT BACKGROUND AND OBJECTIVES

1.2.1 Background

The City of Los Angeles Department of Water and Power (LADWP) is currently implementing the Owens Lake Dust Mitigation Program (OLDMP) on Owens Dry Lake in order to reduce exceedances of the state and federal particulate matter (PM_{10}) air quality standards. LADWP constructs and operates dust control measures (DCMs) on the lake in compliance with Agreements with the Great Basin Unified Air Pollution Control District (GBUAPCD) under the authority of California Health & Safety Code Sec. 42316, legal settlement agreements with GBUAPCD, lease agreements for use of state lands (administered by the California State Lands Commission (CSLC)), and other regulatory approvals.

Under Phase 7 of the OLDMP, seven parcels on 3.5 square miles of Owens Dry Lake were proposed for the implementation of Moat and Row DCM. A lease from CSLC for one of the seven parcels (area T1A-1) was granted in December 2009 for the installation of sand fences on approximately 0.4 square miles; construction of the sand fences was completed in October 2010. However, a lease to construct the Moat and Row facilities on the remaining 3.1 square miles was denied in April 2010. In May 2010, LADWP proposed to amend the project description for the Phase 7 Moat and Row project to include Tillage on a portion of the project area as an interim DCM. Tillage on 3.1 square miles (within six parcels) was approved by GBUAPCD, but because of challenges related to soil conditions and the need for special tilling equipment in five of the six targeted parcels, implementation was not completed. Tillage is proposed to be implemented in T12-1 as part of the Phase 7a project. Since implementation of the Moat and Row DCM is no longer planned, LADWP has defined a new project, Phase 7a, to control dust on the previously identified Phase 7 Moat and Row areas (T1A-3, T1A-4, T12-1, T32-1, T37-1, and T37-2) that had been identified as emissive by GBUAPCD.

LADWP has prepared this Initial Study (IS) to address the impacts of construction and operation of the Owens Dry Lake Phase 7a DCMs (Phase 7a project). Phase 7a will expand and modify the existing system of DCMs on the lake by installation of DCMs on currently uncontrolled areas and modification of existing DCMs in other areas of the lake (Transition Areas). Phase 7a includes Best Available Control Measures (BACM) approved for controlling dust emissions on Owens Dry Lake: Gravel Cover, Shallow Flooding and Managed Vegetation.

The IS has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., and the State CEQA Guidelines, Title 14 California Code of Regulations (CCR) Section 15000 et seq. The IS serves to identify the site-specific impacts, evaluate their potential significance, and determine the appropriate document needed to comply with CEQA. For this project, LADWP has determined, based on the information reviewed and contained herein, that the proposed Phase 7a project could potentially have a significant environmental impact. Based on this IS, an Environmental Impact Report (EIR) is the appropriate CEQA document.

1.2.2 Project Objectives

The Phase 7a project will be implemented in compliance with Order 110317-01 of the GBUAPCD. The objective of the Phase 7a project is to control dust emissions by implementation of BACM on 3.1 square miles of Owens Dry Lake in a manner that does not increase water commitments. To meet this objective, dust control will be installed on 3.1 square miles of area identified as emissive by GBUAPCD. In addition, 3 to 4 square miles of existing shallow flooding dust control areas (DCAs) will be transitioned to a Hybrid dust control method. Hybrid dust control is a new concept that will incorporate the use of the three approved dust control measures: Shallow Flooding, Managed Vegetation and Gravel Cover. The transition to Hybrid dust control will allow a more efficient use of water at Owens Dry Lake. The Phase 7a Project consists of a total of 3.1 square miles of new DCAs and 3 to 4 square miles of Transition Areas for a total area of 6.1 to 7.1 square miles.

1.2.2.1 Previous Environmental Documentation

To analyze the environmental effects of the Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan (SIP) (GBUAPCD, 2008a), the GBUAPCD prepared and certified a Final Subsequent Environmental Impact Report (2008 SIP FSEIR) (GBUAPCD, 2008b) on February 1, 2008 and authorized the implementation of 15.1 square miles of dust control within the Owens Lake Planning Area. As noted above, approximately 3.5 square miles of this area was proposed for construction of Moat and Row DCM. LADWP prepared and certified a Supplemental EIR for the Owens Lake Revised Moat and Row DCMs in 2009 (LADWP, 2009) which tiered off the 2008 SIP FSEIR to address changes to the design and operation and maintenance plan for the Moat and Row DCMs. An Addendum to the Moat and Row SEIR was prepared by LADWP in May 2010 to address the change in the project description to add Tillage as an interim DCM.

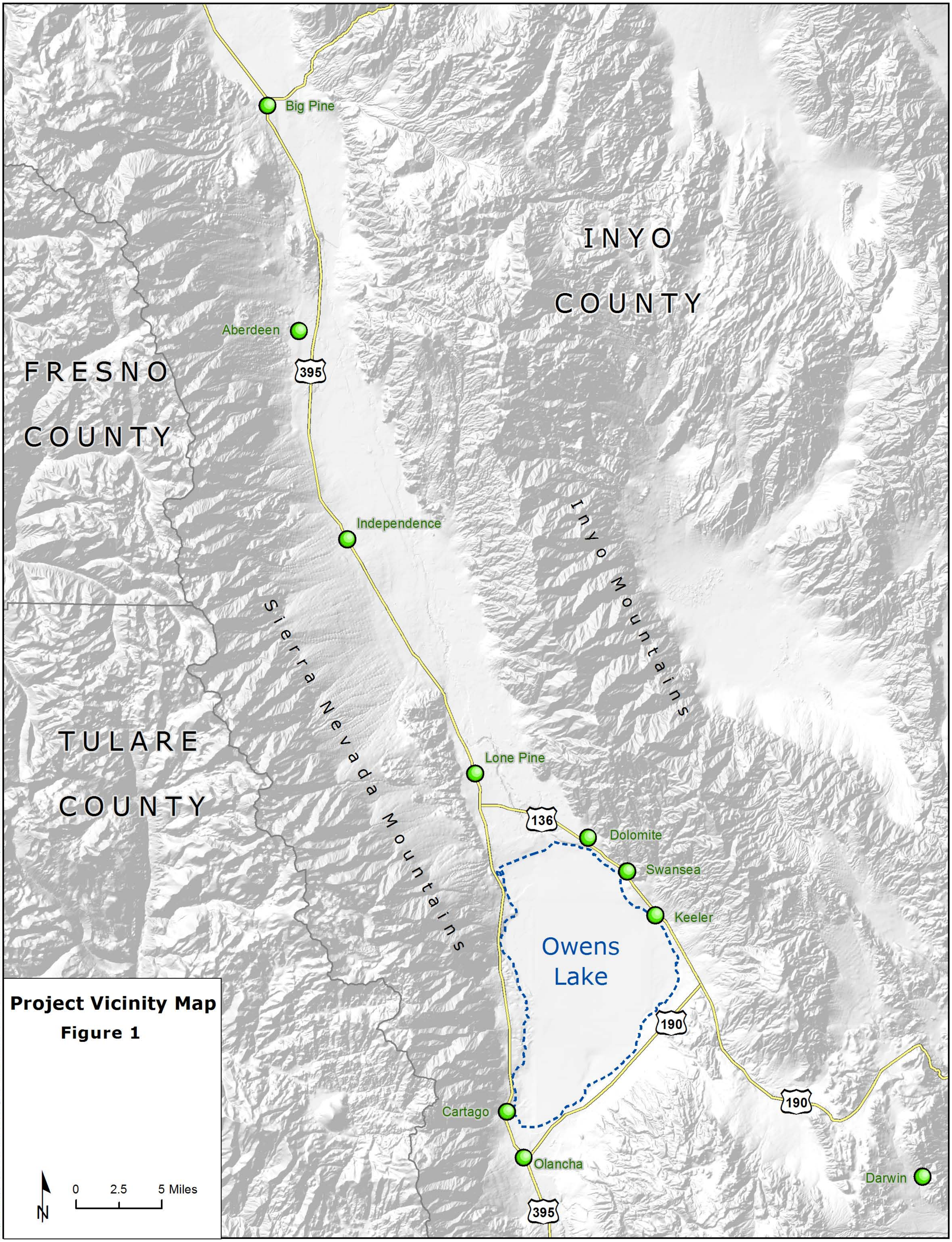
Under the Phase 7a project, LADWP will implement current BACM including Gravel Cover, Shallow Flooding, and Managed Vegetation within six subareas totaling 3.1 square miles of the surface of the Owens Dry Lake playa to reduce PM_{10} emissions. Additionally, 3 to 4 square miles of existing Shallow Flooding DCAs (out of 6 square miles under consideration) will be transitioned to a mix of BACM to conserve water. A total of 9.1 square miles (the 3.1 square miles of new DCAs plus the 6 square miles of potential Transition Areas) is the subject of this environmental review document.

1.3 PROJECT LOCATION AND ENVIRONMENTAL SETTING

The 110-square-mile Owens Dry Lake is located in Inyo County, California, approximately 5 miles south of the community of Lone Pine (**Figure 1**) and approximately 61 miles south of the city of Bishop. Owens Dry Lake is bounded by State Route (SR) 136 to the north and east, SR 190 to the south, and U.S. Highway (U.S.) 395 to the west. Phase 7a project areas are located as noted in **Table 1** and **Figure 2**. Other nearby communities include Swansea and Dolomite to the northeast, Keeler to the east, and Cartago and Olancha to the south.

Table 1
Locations of Phase 7a Dust Control Areas

DCA	**Size** (acres)	**USGS 7.5 Min Quadrangle**	**Nearest Community - Distance** (miles)
T1A-3	517	Vermillion Canyon	Cartago - 2.3
T1A-4	621	Vermillion Canyon	Cartago - 3.4
T12-1	209	Owens Lake	Keeler - 7.1
T32-1	101	Dolomite	Keeler - 4.3
T37-1	137	Lone Pine	Dolomite - 4.8
T37-2	378	Bartlett	Dolomite - 5.9
T1A-2_a	259	Olancha/Vermillion Canyon	Cartago - 1.3
T10-2_a	270	Vermillion Canyon	Olancha - 6.6
T2-1	334	Owens Lake	Cartago - 1.3
T5-1	87	Vermillion Canyon	Olancha - 4.6
T5-3	141	Vermillion Canyon	Olancha - 4.9
T5-3 Addition_a	86	Vermillion Canyon	Olancha - 5.4
A5-3 Addition_b	52	Vermillion Canyon	Olancha - 5.4
T26	853	Owens Lake	Keeler - 0.3
T28N	454	Owens Lake / Dolomite	Swansea - 1.0
T28S	300	Owens Lake	Swansea - 1.6
T30-1_a	169	Dolomite	Swansea - 0.4
T30-1_b	523	Dolomite	Swansea - 0.4
T35-1	79	Lone Pine	Dolomite - 3.4
T35-2	85	Lone Pine	Swansea - 3.5
T36-1_b	309	Dolomite	Dolomite - 2.9



Project Vicinity Map

Figure 1

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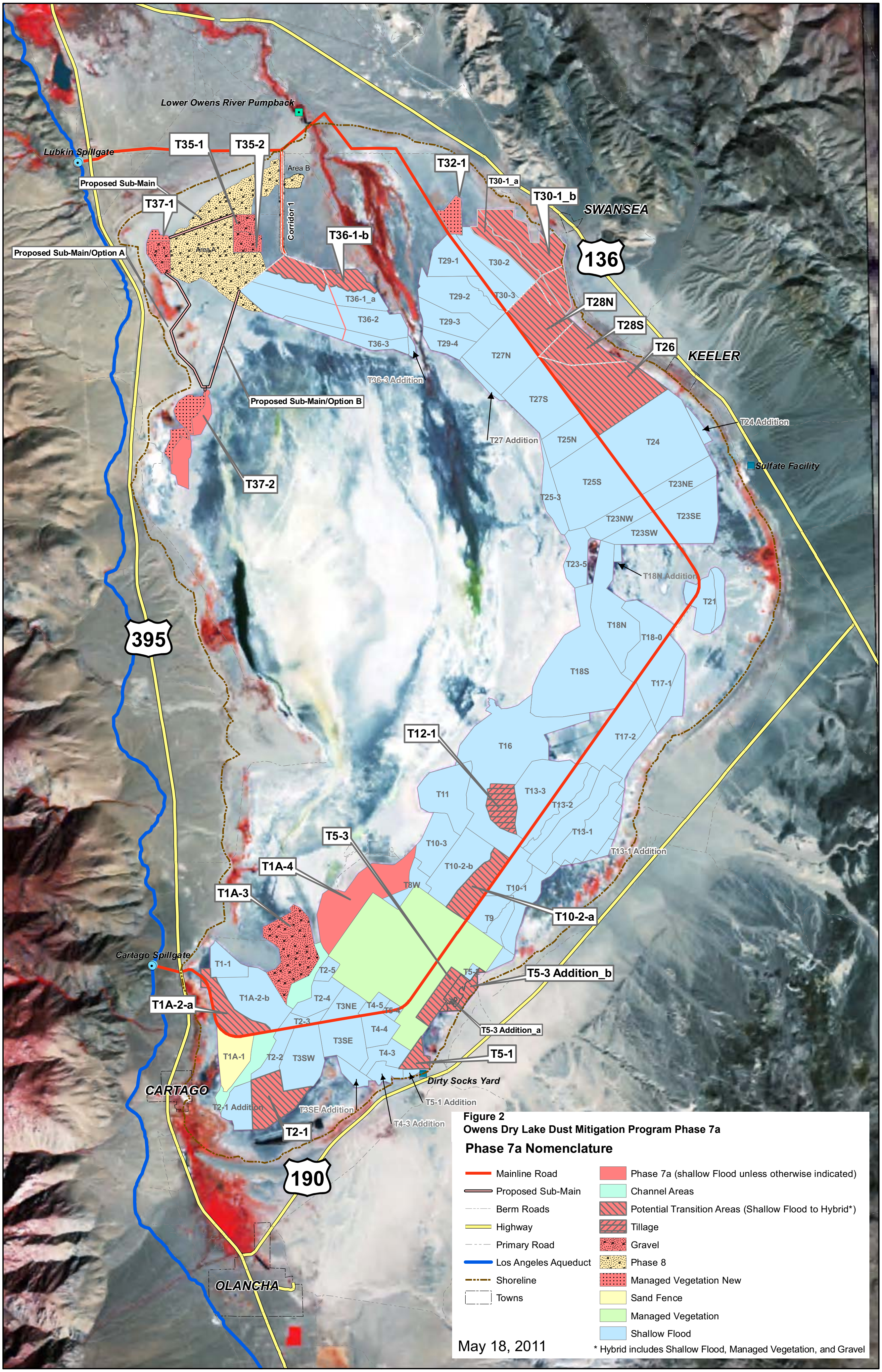


Figure 2
Owens Dry Lake Dust Mitigation Program Phase 7a

New Phase 7a DCAs (T1A-3, T1A-4, T12-1, T32-1, T37-1, and T37-2) are predominantly barren playa with limited vegetative cover. Areas of vegetation are present in T32-1, T37-1 and T37-2. The remaining Phase 7a areas are existing Shallow Flooding DCAs (T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b, and potentially T35-1 and T35-2) proposed for transition to BACM Hybrid.

1.4 PROJECT DESCRIPTION

The Phase 7a Project consists of a total of 3.1 square miles of new DCAs and 3 to 4 square miles of transitioned dust controls for a total area of 6.1 to 7.1 square miles. The 3.1 square miles of new DCAs consist of six separate subareas. Within five of these subareas totaling 2.77 square miles, LADWP will implement current BACM including Gravel Cover, Shallow Flooding, and Managed Vegetation. The remaining sixth area (0.33 square miles) is currently planned for a Tillage BACM test (**Figure 2**). The Phase 7a project components are:

- Shallow Flooding in T1A-4 and a portion of T37-2
- Managed Vegetation in T32-1 and portions of T37-1 and T37-2
- Gravel Cover in T1A-3 and a portion of T37-1
- A Tillage BACM test in T12-1

Water demand related to implementation of BACM on the new Phase 7a dust control areas (DCAs) will be balanced with water conservation measures at existing DCAs, including:

- Conversion of approximately 3 to 4 square miles of existing Shallow Flooding to a hybrid of BACM including Managed Vegetation, Gravel Cover and Shallow Flooding (Transition Areas). The 3 to 4 square miles of Transition Areas will be selected from the following 6 square miles of existing Shallow Flooding areas: T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b

- Conversion of existing Shallow Flooding areas T35-1 and T35-2 to Gravel Cover

1.4.1 Shallow Flooding

1.4.1.1 Shallow Flooding Description

This DCM consists of releasing water into a (generally) bermed DCA and allowing it to spread, wet the surface, and thereby suppress windborne dust. In order to meet the requirements for dust control in the 2008 SIP for Shallow Flooding, at least 75 percent of the surface must be wet or have saturated soil. The performance requirements for Shallow Flood BACM are set forth in detail in the 2008 SIP.

Lateral Shallow Flooding is proposed for subarea T1A-4 and a portion of subarea T37-2 (the portion where it is anticipated that vegetation cannot be established). Located in the southern portion of the dry lake adjacent to the existing Managed Vegetation areas (T5 through T8), Subarea T1A-4 occupies approximately 0.97 square miles. Area T37-2 is located on the western edge of the lake, west of the brine pool and occupies approximately 0.59 square miles. It is estimated that the Shallow Flood portion of T37-2 will comprise approximately two-thirds of T37-2.

A lateral Shallow Flooding network for T1A-4 will include two 18- to 24-inch diameter buried pipelines (mainlines) that will supply water to the lateral submains (4- to 12-inch diameter buried pipelines), which will be spaced up to 1,400 feet apart. The network includes a modified whipline array (diameter to be determined by available equipment and cost), spaced up to 120 feet apart and with a length of up to 700 feet. The whipline array includes sprinkler heads spaced up to 70 feet apart or bubblers. Laterals up to 4,000 feet in length will have risers with drains at the end. Lateral valves will be placed at each intersection with the mainline. Flush lines will be incorporated for lateral and whipline drainage and to reduce plugging. A small pump station (capacity determined by infrastructure installed) will be located at the lowest point to drain the system. Drain water will most likely be recycled within T1A-4. A second supply alternative to TA1-4 will also be evaluated during project design that consists of a single 24-inch mainline connected to the zonal mainline near the T1A-1 turnout.

The components of the lateral Shallow Flooding network for T37-2 are similar to the Shallow Flooding design for T1A-4, with the exception of spacing. The lateral submains will be spaced up to 1,000 feet apart. The whiplines in T37-2 will be up to 500 feet long and spacing will be up to 60 feet. Approximately the western third of this area will be designed, constructed, and operated as Managed Vegetation.

Turnout Facilities. Water to the lateral Shallow Flooding will be distributed to the lake bed DCAs via area turnouts. Turnouts consist of above grade piping, pressure reducing valves (PRV), control valves (CV), magnetic flow meters (or flow elements, FE), isolation valves, combination air-vacuum release valves (CARV), pressure indicating transmitters (PIT), filtering system control valve filters, electric equipment, and monitoring and automatic control instrumentation. The turnouts are typically constructed on raised earthen pads adjacent to the DCAs. The turnouts include mechanical equipment and electrical equipment on concrete pads; **Figure 3** is an existing turnout located on the lakebed. It is anticipated that four turnouts will be constructed under the Phase 7a project.

The turnouts will be connected to the zonal mainline that is a continuous loop connecting to the Los Angeles Aqueduct at the north and south ends of the Owens Lake Dust Mitigation Program (OLDMP) area.

Water enters a Shallow Flood area through PRVs, located at the turnouts. The turnouts distribute freshwater to the DCAs via area Shallow Flood submains. The PRVs at the turnouts function to lower the zonal mainline pressure to the submain operating pressure for the shallow flood submains. The PRVs at the laterals function to control and further lower the Shallow Flood submain pressure to the lateral operating maximum pressure.

Figure 3
Existing Turnout on Owens Dry Lake

Source: LADWP, November 2010 (T1A-2)

The PRVs at the turnouts are hydraulically controlled valves. These valves operate by using pilot water (supplied by the freshwater from the submains) to control the valves. The freshwater from the submains contain large quantities of sediments which will clog up the PRVs. To prevent the PRVs from clogging, the pilot water is diverted through a separate pilot water filtration system. Tailwater and Drainwater pump stations collect and recirculate flow within a given shallow flood area and submain to optimize use of water within the irrigated zone and minimize loss of water offsite.

New Supply Pipeline. Two new pipelines will be constructed - one to deliver water from T35-1 to T37-1, and a second pipeline to deliver water to T37-2. Two options are being considered for the pipeline to T37-2. Option A would deliver water from T37-1 to T37-2; Option B – would deliver water from T36-2 to T37-2. The final pipeline alignment will be selected based on soils analyses and constructability review (currently in progress).

Both pipelines will be up to 30 inches in diameter and made from high density polyethylene (HDPE) material. Both pipelines will be installed underneath new roadways to allow for year-round accessibility for maintenance of the pipe and the T37-1 and T37-2 irrigation systems (**Figure 2**). The roadbed for both pipelines will be raised approximately 3 feet, with culverts installed to prevent stormwater from being impounded. Additionally, a load bearing pathway (approximately 16 feet wide, 1 to 2 feet high prefabricated bridge or portable decking) may be installed between the northern and southern portions of T37-2 for maintenance access.

1.4.1.2 Shallow Flooding Construction

Construction of Shallow Flood DCAs for Phase 7a is estimated to occur over 14 months at T1A-4 and at T37-2 with the heaviest levels of construction activity occurring during the dry season. Anticipated sequential activities are:

- Installation of new turnouts
- Land leveling
- Installation of berms
- Pipe and electrical cable excavation
- Placement of irrigation pipes and sprinklers

To the maximum extent feasible, earthwork in each area will be balanced onsite. As suitable, onsite material will be used to build berms and turnout earthen pads. Excess soil from one DCA may be relocated to other areas of the lake for reuse. In some cases, suitable material may be disked and spread to reduce moisture content before placement. Sand bedding, base course, and riprap will be imported to the DCAs. It is anticipated that this material will be obtained from a local gravel production operations such as the LADWP Shale borrow pit and the Federal White Aggregate (F.W. Aggregate) Dolomite mine.

Land leveling will be performed based on existing topography and final design to achieve required 75 percent surface cover of water and consideration of excavation of suitable material for berm and turnout pad construction. It is anticipated that berm heights will vary from 3 to 5 feet or less and the turnout earthen pads may range up to 5 to 8 feet in height to protect facilities from localized flooding. Over excavation will be done underneath proposed earthen berm alignments to remove any unsuitable material. Geotextile fabric will then be placed directly on the existing surface to create a firm base. The earthen berm will be constructed over the geotextile fabric. Earthen berm side slopes facing water will be armored with riprap. Earthen berm slopes not directly in contact with water and travel surfaces will be covered with road base.

1.4.2 Managed Vegetation

1.4.2.1 Managed Vegetation Description

Vegetation on the playa reduces sand motion and soil erosion. Aboveground cover acts as a wind break, lowering the velocity at the playa surface. Under Phase 7a, Managed Vegetation is proposed for the 0.16-square-mile area of T32-1, the northern and western perimeters of T37-1, and a portion of the western half of T37-2. In T37-1 and T37-2 existing vegetation will be enhanced and new vegetation may be planted; the specific acreage of Managed Vegetation will be determined based on soil conditions at the time of construction.

Currently, only saltgrass (*Distichilis spicata*) is approved as a vegetation dust control measure on Owens Dry Lake; existing Managed Vegetation areas T5 through T8, located in the southeastern portion of the dry lake, are planted with saltgrass. A revised plant species list for Owens Dry Lake BACM was developed in 2010 and has been approved by GBUAPCD, but awaits approval by the CSLC. The plant species on this list meet the locally-adapted native criterion specified by the 2008 SIP adopted by the GBUAPCD. In addition to saltgrass, 39 species have been proposed to increase the habitat diversity of the Managed Vegetation areas, reduce fertilizer need, and increase the diversity and amount of seed produced on the playa for use in future projects (**Table 2**). The final species mix in T32-1, T37-1, and T37-2 will depend on the availability of planting material, and suitability of species to soil and hydrologic conditions. The T32-1 area is relatively well drained and will probably be reclaimed (i.e., decline in salinity) fairly rapidly. T37-2 is less well drained and may require additional time for reclamation. The initial cover may be achieved by fast-growing species, but after some time, the stand will probably change and diversify, partly from planted material, and partly from volunteer plants establishing from windblown seed.

An existing supply of 600 pounds of saltgrass seed is stored by S&S Seeds (in Carpinteria, California), and is available for use. Although seed of most species other than saltgrass will need to be collected, some additional seed may be available commercially. If the full complement of desired species is not available initially, the area may be over-seeded or interplanted with additional species in the future.

Seed supply for T32-1, T37-2 and the Transition Areas will be collected by hand, and by targeted mowing of existing vegetated DCAs. Seed of some herbaceous species may be multiplied by planting in managed areas and then harvesting. Once collected and cleaned, seed will be tested for germination, dried, and stored. Before planting, some seed may require special treatment to break dormancy. While seeding is preferred, some species may also be transplanted to accelerate establishment of vegetative cover. The finished landscape will consist of a variety of plants native to the Owens Valley area.

The goal for these areas will be to establish a compliant vegetative cover (per cover requirements in the SIP) as quickly as possible. Vegetative cover is assessed each fall, and compliance is determined by comparing cover levels with criteria contained in the BACM definition. The criteria contained in the 2008 SIP are currently in effect, but a modification providing for the compliance methodology on existing Managed Vegetation area to be applied to new managed Vegetation areas is pending before the GBUAPCD's Board, having already gained a staff recommendation for approval. These new criteria accommodate levels of soil and drainage variability that occur on the playa, while maintaining needed levels of dust control. They are likely to be the basis for evaluating new Managed Vegetation on Owens Dry Lake. The criteria have been applied to the existing Managed Vegetation site during the 2009 and 2010 seasons under a Managed Vegetation Operations and Management Plan with good agronomic and dust control results.

Table 2
Species Proposed for Managed Vegetation DCAs

Scientific Name	Common Name
Alkali Marsh Species	
Amphiscirpus nevadensis	Nevada bulrush
Anemopsis californica	Yerba mansa
Schoenoplectus maritimus	Saltmarsh bulrush
Cordylanthus maritimus	Bird's beak
Distichlis spicata	Saltgrass
Eleocharis parishii	Spikerush
Frankenia salina	Alkali heath
Helianthus annuus	Sunflower
Heliotropium curassavicum	Heliotrope
Juncus arcticus var. balticus	Wire rush
Juncus arcticus var. mexicanus	Mexican rush
Nitrophila occidentalis	Alkali pink
Poa secunda	Blue grass
Schoenoplectus americanus	Bulrush
Sporobolus airoides	Alkali sacaton
Sesuvium verrucosum	Verrucose seapurslane
Playa Scrub Species	
Atriplex confertifolia	Shadscale
Atriplex lentiformis ssp. torreyi	Torrey's saltbush
Atriplex parryi	Parry's saltbush
Atriplex phyllostegia	Leafcover saltweed
Cleome sparsifolia	Fewleaf bee plant
Cleome lutea	Yellow bee plant
Cressa truxillensis	Alkali weed
Kochia californica	Mojave red sage
Poa secunda	Blue grass
Sarcobatus vermiculatus	Greasewood
Suaeda moquinii	Bush seepweed
Chrysothamnus nauseosus	Rubber rabbitbrush
Machaeranthera carnosa	Shrubby alkaliaster
Marsh and Riparian Species	
Paspalum distichum	Knotgrass
Populus fremontii	Fremont cottonwood
Salix lasiolepis	Arroyo willow
Schoenoplectus californicus	Bulrush
Typha domingensis	Southern cattail
Typha latifolia	Broad-leaved cattail
Cyperus laevigatus	Smooth flatsedge
Juncus torreyi	Torrey's rush
Triglochin concinna	Slender arrowgrass
Muhlenbergia asperifolia	Scratchgrass
Phragmites australis	Common reed

With fall seeding, a fast-growing early-cover species mix, and potentially some spring transplants, compliance in these areas may be achieved during the first growing season. In the event that this does not occur, areas with the most limited growth would be assessed for drainage limitations. Drainage would be improved by constructing surface, French, or subsurface drains, and the area might be replanted. The site would continue to be managed to comply and/or control dust as swiftly as possible.

1.4.2.2 Managed Vegetation Construction

During installation and establishment, several steps will be required to create an environment where plants can thrive on the otherwise dry and hypersaline playa:

- Irrigation systems will be installed and may include sprinklers, bubblers or drip irrigation. For areas with sprinklers or bubblers, irrigation piping will be buried to avoid damage from traffic, animals, temperature fluctuations, and UV radiation. Sprinkler heads or bubblers in these areas will rise from the buried laterals to allow water to be dispersed across the planted area during irrigation. Some irrigation systems (i.e., drip irrigation) require filtration of water; filters would be located at the turnout and at times in the field. Liquid fertilizer will periodically be blended into irrigation water at relatively low rates that have been shown to accelerate growth and increase salinity tolerance (and therefore plant growth and survival) of several native species studied on Owens Dry Lake. No new permanent fertilizer stations are proposed. The Phase 7a Managed Vegetation areas will be designed with concrete pads (with containment) that can used for portable fertilizer delivery tanks. Periodic fertilizer delivery would be by flatbed or pickup truck. The specific locations of these concrete pads will be determined during project design.

- Broad, raised ridges will be formed to provide a reclaimed drained area within which plants can grow. Without this feature, saline shallow groundwater can easily invade the root zone, especially during and after storms, and kill plants. The ridges will be laid out such that they traverse topographic contours, allowing surface water to drain downhill along the low areas. Closed depressions that would otherwise prevent surface drainage will be opened by grading. Starter fertilizer needed to promote early growth and expansion will be applied and incorporated into the soil. The amounts of fertilizer applied to native plant stands are typically very low relative to what is used for agricultural production, but the ability of plants to tolerate drought and salinity, and to rapidly expand to protect the soil, is greatly enhanced.

- Initial reclamation (reduction of salt concentration in the surface soil by irrigation) will be completed before planting. This will likely require several irrigation events that may occur over up to 30 or 40 days. Once monitored soil salinity levels have declined to acceptable levels, the land will be allowed to dry sufficiently until it can again bear equipment traffic.

- Seeding will be done with a brillion seeder (wheeled seed bin that tows behind a tractor) and an air disc/drill. Seed is dispensed from the bottom of the box and buried by pulverizing discs that also break up surface soil, providing good seed-soil contact needed for germination and emergence.

1.4.3 Gravel Cover

1.4.3.1 Gravel Cover Description

Under the Phase 7a project, LADWP will install a 4-inch layer of coarse gravel to T37-1 and T1A-3, and potentially T35-1 and T35-2, to reduce PM_{10} emissions by: (a) preventing the formation of efflorescent evaporite salt crusts at the surface, because the large pore spaces between the gravel particles disrupt the capillary movement of saline water to the surface where it can evaporate and deposit salts; and (b) creating a surface that has a high threshold wind velocity so that direct movement of the large gravel particles is prevented and the finer particles of the underlying lake bed soils are protected.

The term "gravel" includes clasts from both fluvial and alluvial sources and crushed stone. The gravel will be screened to greater than ½-inch in diameter, pursuant to the specifications issued by the GBUAPCD (GBUAPCD, 2008a). Gravel application was estimated at approximately 122,000 tons distributed over 0.21 square miles of T37-1; depending on the acreage of Managed Vegetation in this DCA, the volume of gravel installed will be reduced. Other gravel application includes: approximately 447,000 tons distributed over 0.79 square miles of T1A-3, 67,000 tons distributed over 0.11 square miles of T35-1, and 92,000 tons over 0.15 square miles of T35-2.

Gravel Sources. It is anticipated that gravel will be obtained from local gravel production operations such as the F.W. Aggregate Dolomite mine or the LADWP State Route 136 Shale borrow pit (LADWP Shale borrow pit). The LADWP Shale borrow pit is located just west of the Keeler Fan gravel site – a site previously considered as a gravel source and referenced in the Memorandum of Agreement between LADWP and the GBUAPCD (1998 MOA). The LADWP Shale borrow pit is located east of SR 136, approximately 1.5 miles southeast of Keeler, and less than 2 miles from the lakebed. The LADWP Shale borrow pit is located on public lands managed by the U.S. Bureau of Land Management (BLM) and operated per the requirements of the Surface Mining and Reclamation Act (SMARA). Shale is a fine-grained sedimentary rock consisting of compacted and hardened clay, silt or mud. The LADWP Shale borrow pit is currently permitted for 40 acres of development.

The F.W. Aggregate Dolomite mine is a privately owned commercial aggregate facility located in Dolomite, California, approximately 0.75 miles southeast of Swansea. The access point for the mine is directly off SR 136, between Swansea and Keeler. The Dolomite mine is situated on both privately owned lands and public lands managed by the BLM. Three subareas of the mine (Durability, North Pole, and Translucent) total approximately 480 acres and are able to produce up to 50 million tons; the site is permitted up to the year 2057 (T. Lopez, pers. comm., June 25, 2010). Rock at the F.W. Aggregate site is obtained from a dolomitic limestone source (mountain face), which is blasted and crushed to supply primarily white decorative rock. The existing 0.14 square miles of Gravel Cover DCM area (Corridor 1 which separates Phase 8 Areas A and B) was covered with limestone from the Dolomite mine. This source has also supplied other areas on the lakebed where gravel and rip-rap were necessary for road construction and for armoring of berms.

Gravel Effectiveness. The effectiveness of Gravel Cover is summarized from the 2008 SIP (GBUAPCD, 2008a). According to GBUAPCD, gravel blankets (also known as Gravel Cover) are effective at controlling dust emissions on essentially any type of soil surface. A gravel layer forms a non-erodible surface when the size of the gravel is large enough that the wind cannot move the surface. If the gravel surface does not move, it protects finer particles from being emitted from the surface. Gravel and rock coverings have been used successfully to prevent wind erosion from mine tailings in Arizona (Chow and Ono, 1992).

The GBUAPCD estimated the potential PM_{10} emissions from a gravel layer using the U.S. Environmental Protection Agency (USEPA) emission calculation method for industrial wind erosion for wind speeds above the threshold for the surface (GBUAPCD, 2008a). PM_{10} will not be emitted if the wind speed is below the threshold speed. With a minimum particle size of ½ inch, a gravel layer will have a threshold wind speed of more than 90 miles per hour measured at 10 meters (Transportation Research Board, 1992; Ono and Keisler, 1996). The GBUAPCD predicted that PM_{10} emissions would be virtually zero for a gravel layer since the threshold wind speed to entrain gravel, and thus PM_{10}, is above the highest wind speeds expected for the area. A 100 percent reduction of PM_{10} from areas that are covered by gravel was predicted.

The proposed 4-inch thick gravel layer is intended to prevent capillary movement of salts to the surface. Were fine sands and silts to fill in void spaces in the gravel, capillary rise of salts might ensue and reduce the dust control effectiveness of a gravel layer. In addition, finer particles would lower the average particle size and lower the threshold wind speed for the surface. The GBUAPCD performed small-scale gravel test plots at two sites on Owens Dry Lake starting in June 1986. These tests showed that 4-inch thick gravel blankets composed of ½- to 1½-inch and larger rocks prevented capillary rise of salts to the surface. Observations of un-graveled test plots in the same area, one with no surface covering and another with local unscreened alluvial soil, showed that salts would otherwise rise to the surface (Cox, 1996).

Permeable Geotextile Fabric. Gravel Cover will be placed over a nonwoven geotextile fabric (anticipated to be approximately 2.3 millimeter (90 mils) thick to prevent gravel from settling into lakebed sediments and thereby losing effectiveness in controlling dust emissions. The permanent geotextile will be permeable to allow draining. Geotextile membranes are artificial fabrics that have a variety of uses including: filtration/drainage, ground stabilization, structural waterproofing, land containment, as well as weed and root control. The geotextile is chemically inert and generally not affected by acids and alkalis that may be present in the soils.

Access Roadways for Gravel Areas. The boundaries surrounding T37-1 and T1A-3 will have raised roadbeds for vehicle access and for wind protection to limit sand inundation of the gravel. The roadbeds will be earthen, approximately 3 feet high, 16 feet wide and armored with gravel. Vehicle bypass pads (turnoff or turnaround pads) (approximately 20 feet by 40 feet in area) will facilitate vehicle travel in two directions. Geotextile fabric may be placed directly on the existing surface to create a firm base. The earthen raised roadway will be constructed over the geotextile fabric. Earthen side slopes facing water or adjacent to potential runoff flows will be armored with rip rap. Earthern slopes not directly in contact with water and travel surfaces will be covered with road base. Installation of access roadways on the boundaries of T37-1 and

T1A-3 will include earthwork inside of the boundary of the DCAs; suitable earth material will be scraped, used to construct the raised roadway, and then the area will be smoothed to an even slope. Base course (crushed rock less than ¾ inch) from a local gravel source would then be placed on the travel surface. To the extent feasible, Gravel Cover for the access roadways shall be consistent with the type, size, and color of the Gravel Cover placed on the adjoining lakebed areas.

1.4.3.2 Gravel Cover Construction

Construction activities for gravel installation at T1A-3, T35-1, T35-2 and T37-1 for Phase 7a are:

- Development of gravel stockpile area
- Installation of access roadways
- Gravel conveyance
- Geotextile and Gravel installation

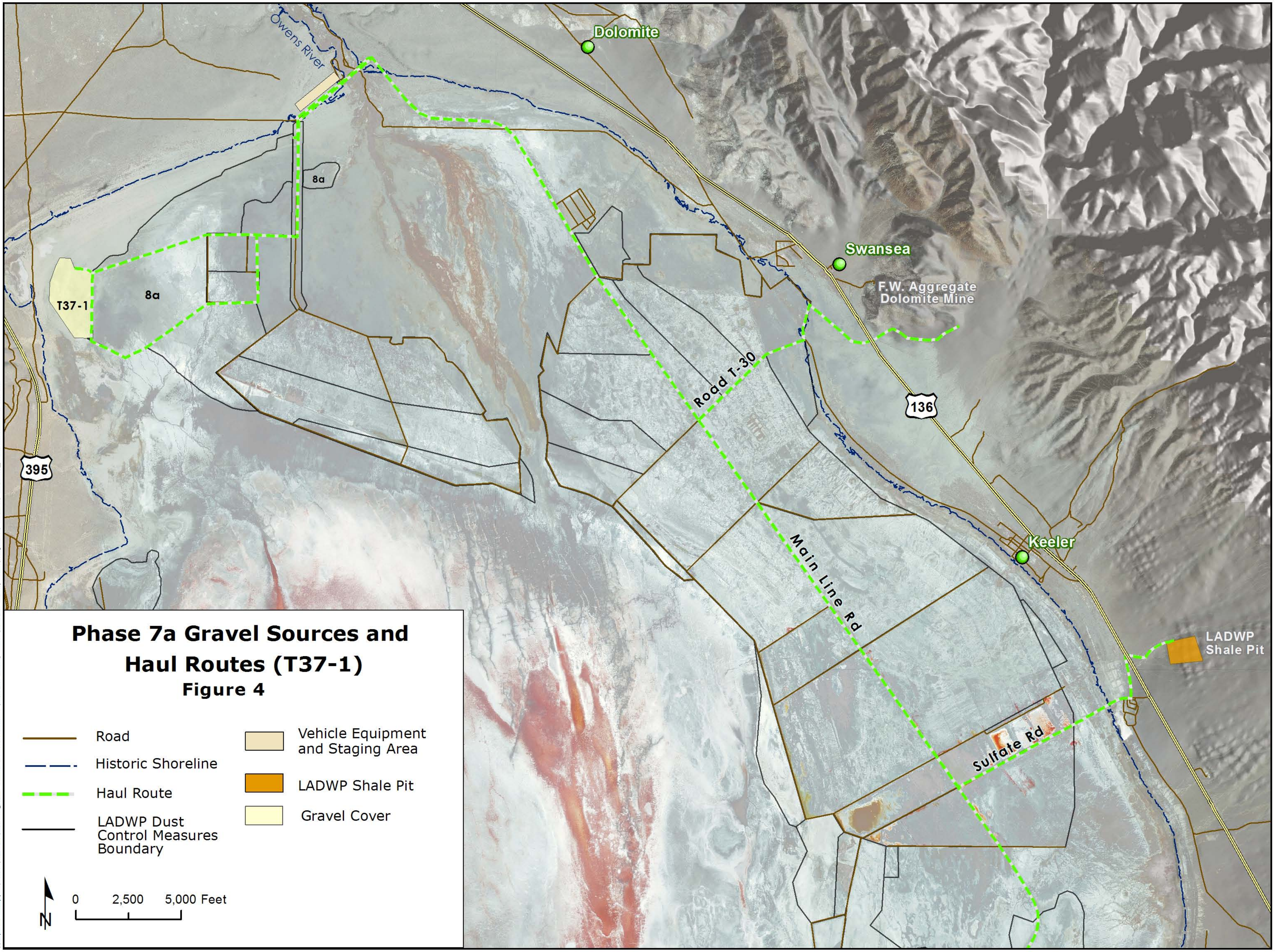
Gravel Stockpile. Gravel stockpile areas will be developed within the boundaries of both T1A-3 and T37-1. These areas will be covered with aggregate to prepare the sites for gravel deliveries during the initial months of construction. Dump trucks will deposit gravel and a dozer will be used to pile the aggregate. Assuming 25 tons per truck, approximately 3,000 tons per day will be transported to each staging area location. Gravel transport will continue throughout the construction period concurrent with geotextile fabric and gravel installation. From the stockpile location, low ground pressure (LGP) vehicles will be used for travel directly on the playa.

Gravel Conveyance. If gravel is obtained from the LADWP Shale borrow pit, trucks will cross SR 136 to Sulfate Road to Main Line Road and then to the stockpile locations (at T37-1 or T1A-3) (**Figures 4** and **5**). Although a conveyor is not currently installed at the borrow pit, if one was constructed in the future it could be used to convey gravel across SR 136 to the LADWP Sulfate Facility and then trucks would be used to transport gravel to the stockpile locations.

If gravel is obtained from F.W. Aggregate Dolomite mine, trucks will cross SR 136 to the T30 road to Main Line Road and then to the stockpile locations (at T37-1 or T1A-3).

Geotextile Installation. Before installation of the geotextile membrane, minor land leveling may be required in areas where obstructions will damage the fabric. A pipe dragged behind a tractor will remove localized high and low spots and prepare the surface; there will be no import or export of soils related to this minor site preparation. It is assumed that the fabric will be delivered to the site on spools carried by flatbed trucks. Small areas of fabric will be rolled out and staked to secure them before gravel installation.

The two vehicle and equipment staging areas previously used (for Phases 7 and 8) will be used for Phase 7a. These previously disturbed sites are located near the intersection of Main Line Road and Corridor 1 at the north end of the lake (20 acre site) and at the southern end of the lake adjacent to Dirty Socks Access Road (2.7 acre site). In addition to office trailers and equipment and vehicle storage, these areas will have fueling stations for gas and diesel. Fuel trucks will be used to refuel construction equipment (including the low ground pressure gravel trucks) and the



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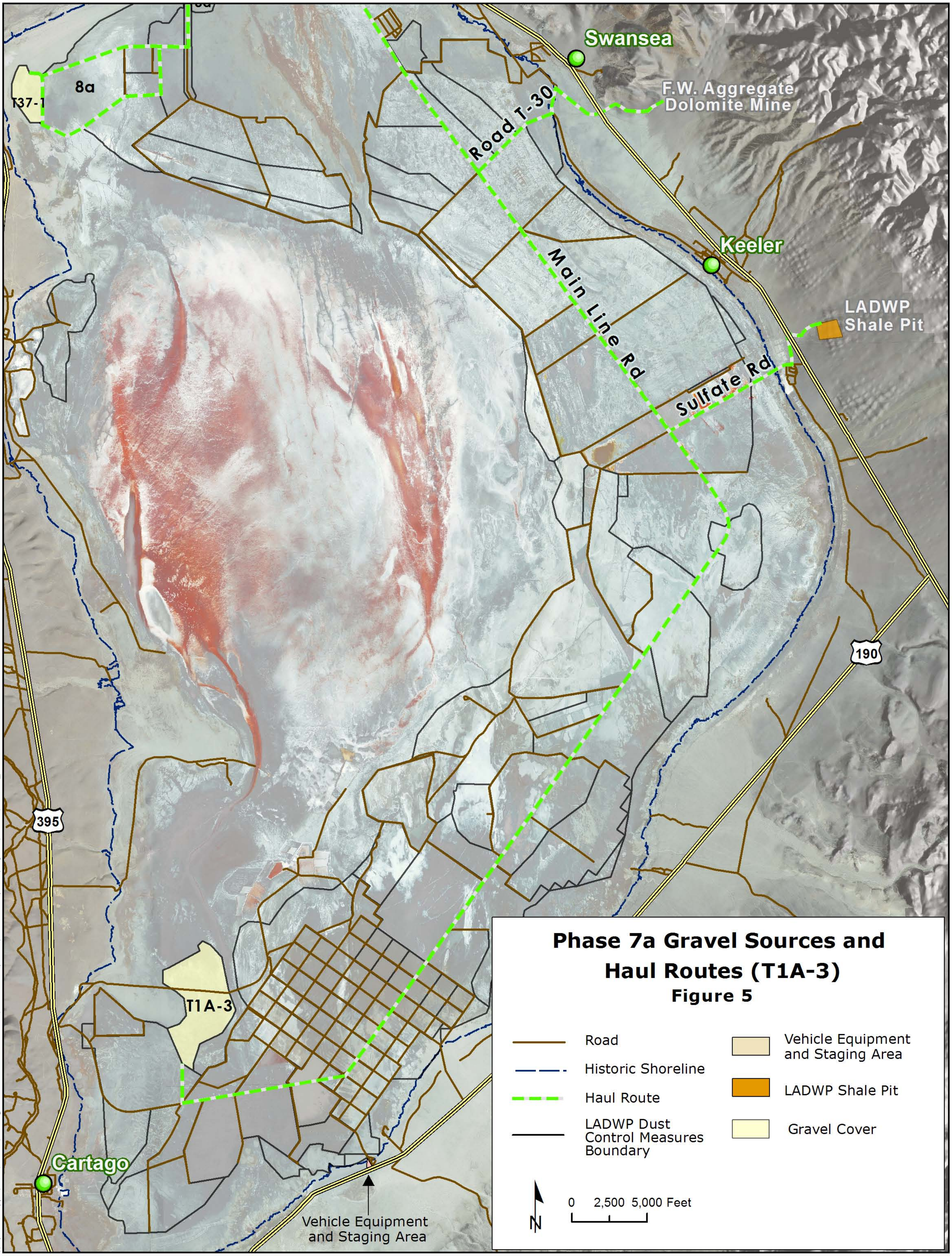


Phase 7a Gravel Sources and Haul Routes (T1A-3)
Figure 5

\\uspas1netapp1\mum\Clients\Los Angeles Water&Power LADWP\Owens Valley Data\Owens Valley GIS\Projects\Phase8\Phase7a_HaulRoutesT1A-3.mxd long haul gravel trucks; no vehicle fuels or oils will be stored in the gravel stockpile areas. Additionally, refueling may occur at the existing LADWP Sulfate facility. Once the geotextile is staked, dozers and ground crews will spread gravel to the required 4-inch thickness. Depending on site conditions, conveyors may be used internally within the DCA boundaries to move gravel from the stockpile locations to other areas of the DCA site.

The onsite construction workforce will consist of laborers, supervisory personnel, support personnel, and construction management personnel.

1.4.4 Tillage

Tillage is commonly used to control wind erosion in agricultural and arid regions around the world. It works by clodding and roughening the soil surface, rendering it more resistant to wind erosion. Surface roughness reduces the wind velocity at the surface, so that windblown soil particles like sand are trapped. The creation of soil clods through appropriate tillage methods forms a stable surface resistant to wind erosion by binding of the available fine-grained loose soil particles.

Tillage was previously applied on the playa of Owens Dry Lake for temporary dust control in some Shallow Flooding construction areas (T21-A, T21-B, T18-O, T17-1_a, T17-2_a, T16, T10-2_b, and T10-3) between October 1, 2009 and April 1, 2010. This Tillage reduced the frequency and intensity of observed emissions within these areas, even when wind erosion occurred within untilled areas immediately adjacent.

Under Phase 7a, a Tillage management plan would be implemented as part of a new BACM test on 0.33 square miles of T12-1, an area with relatively heavy (rich in clay and silt) soils. The BACM test plan (in preparation by Air Sciences, 2011) states that the area will be initially tilled and then once it begins to deteriorate such that it does not meet required control dust efficiency it will be sprinkler irrigated to increase soil moisture. Irrigation will be followed by re-tilling to re-establish needed dust control efficiencies. Irrigation piping (submains and whiplines, flush lines connected to flush mains) would be buried more than 2 feet below the soil surface (such that they are below the reach of the tillage equipment) with sprinkler risers positioned throughout the DCA; the layout will be similar to the Shallow Flooding areas.

Tractors pulling plows or harrows will roughen the surface of T12-1 creating serpentine swaths of tilled ridges (to avoid a gridded, regimented appearance) with spacing between swaths allowing for irrigation installation and maintenance, as well as monitoring access. The goal of the BACM testing will be to establish dust control efficiency relationships over a wide range of climatic conditions upon which to base performance specifications in a new BACM description. Over time, the surface roughness achieved by Tillage will begin to be altered by weathering and dust control efficiency may decline. The amount of fine material (sand and smaller particles) on the surface may change due to 1) disaggregation of soil, 2) crusting and re-aggregation of fine material, 3) deposition of transported fine material, and 4) erosion and export of material. When monitoring indicates that these processes have reduced the dust control efficiency achieved by Tillage to levels that threaten to violate air quality standards, the area will normally be re-tilled. The goal of re-tilling will be to restore erosion-resistant levels of roughness and aggregation. When Tillage control efficiency declines, the area will be irrigated to restore optimum soil moisture, and then re-tilled. Monitoring will include visual observations of surface conditions and other actions as outlined in the Tillage BACM Test Operations Plan (in preparation by Air Sciences, 2011).

A complete Tillage BACM test project plan must be submitted and approved by the GBUAPCD before any work in the T12-1 area can proceed. Tillage may be implemented in T12-1 before installation of the irrigation network. This Tillage (without the irrigation system) was evaluated in the Addendum to the Supplemental EIR for the Owens Lake Dust Control Measures for the Phase 7 project (LADWP, 2010a).

To minimize dust emissions during construction, areas will be tilled during low wind periods. To the extent feasible, installation will occur in the summer season when winds are relatively lower and the playa tends to be less erodible.

1.4.5 Transition Areas from Shallow Flooding to BACM Hybrid

New Shallow Flooding in subareas T1A-4 and T37-2, and new Managed Vegetation in T32-1 and T37-2, are estimated to require approximately 3,700 acre-feet per year (afy) of water. Additional irrigation water will be required in T37-1; the volume will depend on the acreage of Managed Vegetation. To provide water to these areas, approximately 6 square miles of 13 existing DCAs (T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b) will be evaluated for transition from Shallow Flood to a hybrid mix of approved BACMs. Approximately 3 to 4 square miles will be converted under the Phase 7a project. Note that most areas proposed for transition are partially vegetated. For example, T30-1 (_a and _b) is currently designated as Shallow Flooding by the LADWP and evaluated as Shallow Flooding by the GBUAPCD, despite significant vegetative cover. As of the end of 2010, vegetative cover in this area is being evaluated relative to proposed Managed Vegetation criteria. Areas that pass will be proposed to the GBUAPCD for evaluation as Managed Vegetation for compliance purposes.

While 3 to 4 square miles of existing Shallow Flooding DCAs are proposed for transition to BACM Hybrid, approximately 6 square miles will be evaluated. Consideration of this larger area is proposed since soil and drainage data are limited; it is anticipated that some areas may prove too difficult to vegetate. Owens Dry Lake soils present significant challenges (mainly a combination of very high salinity, extremely poor drainage, and low bearing capacity) for the establishment of compliant stands of vegetation. Ultimately, 3 to 4 square miles will be chosen from the 6 square miles studied for transition as part of the Phase 7a project.

The proposed Transition Areas will be developed as BACM Hybrid. Each portion of these areas would be evaluated as an existing (per the SIP definition) dust control measure for compliance purposes. Under the Hybrid concept, it is estimated that approximately two-thirds of the area will be a mix of Shallow Flooding and Managed Vegetation and up to one-third will be Gravel Cover (**Figures 6** and **7**). For a gravel layer 4 inches thick, approximately 700,000 tons of gravel will be applied. Irrigation systems similar to those previously described will be installed in non-gravel areas.

Figure 6
Rendering 1 of BACM Hybrid Area

Figure 7
Rendering 2 of BACM Hybrid Area

Construction, reclamation, planting, establishment, and compliance in the Transition Areas will proceed as previously described for the new Managed Vegetation areas. However, due to potentially more challenging soil and drainage conditions in the Transition Areas, multi-year efforts for establishment may be necessary. Minor reconfiguration of the eastern berms for areas T30-1_b, T28N, T28S, T26, T5-1, and T5-3 may be required. Additional berm modifications may be necessary for access.

A reasonable Transition Areas Dust Control Plan will be developed and implemented during construction for all construction areas, including the Transition Areas. The plan will particularly address measures to be taken when removing existing DCAs from service. The following best management practices (BMPs) will be implemented:

- Use of water trucks to spray roadway travel surfaces on existing and temporary roads used for construction
- Installation of temporary sand fences strategically placed within the DCA being constructed
- Placement of a gravel surface on interim staging areas within the DCA used by the contractor
- Termination of work activities during high wind events

1.4.6 Other Features for Phase 7a DCAS

1.4.6.1 Drainage System

For new non-gravel DCAs included in Phase 7a (T32-1, T12-1, T37-1, T37-2, T1A-4), drainage systems will be installed beneath Managed Vegetation fields and on the margins of Shallow Flooding areas. New drainage laterals to be installed in Phase 7a will be perforated plastic pipes in covered trenches placed 5 to 9 feet below the ground surface. The drainage system will control soil saturation to:

- maintain drained root zone under irrigated vegetation
- maintain drained pipe zone (prevent pipe floatation)
- capture water along the DCA perimeters to reduce seepage off-site

Drainage return flows can be recirculated into Shallow Flooding areas. The existing drainwater system functions in this manner. A drainwater mainline (brineline) runs parallel to the water supply mainline throughout the dust mitigation area from T2 to T25. The drainwater mainline also delivers water to the Shallow Flooding areas. Management of drainwater will ultimately depend on salt management needs.

1.4.6.2 Power Supply and Controls

Power for pumps for water conveyance to and from DCAs is supplied by an existing underground 3-phase, 4.8 KV grid. The 4.8 KV grid will be connected to the new turnouts with directed buried cables. The turnouts have their own distribution system for power and controls. Transformers at the turnouts convert the power to lower voltages to supply various equipment, lighting, and control instrumentation. The 3-phase 480 volts alternating current (VAC) is typically used for pump stations. Directed buried cables will be used to supply power from the turnouts to the pump stations. T1A-4, T32-1 and T37-2 will have small pump stations. For Phase 7a, a new high voltage cable will be installed to power pumps associated with T37-2.

1.4.7 Overall 7a Construction Sequence

After design of the proposed facilities is complete, it is anticipated that the construction sequence would proceed as follows:

- Tillage
- Turnout construction
- Earthwork, berm re-enforcement and water distribution systems for Shallow Flooding Areas
- Sprinkler system installation in Transition Areas
- Gravel installation
- Earthwork, berm re-enforcement and sprinkler system installation for BACM Hybrid Areas
- Planting and seeding in Managed Vegetation Areas

1.4.8 Water Requirements

The total water demand for new DCAs (T1A-4, T32-1 and T37-2) for Phase 7a is estimated at approximately 3,700 afy. To enable these additional water commitments, existing areas of Shallow Flooding will be transitioned to BACM Hybrid, and potentially Gravel Cover (T35-1 and T35-2). The approximately 3 to 4 square miles of Transition Areas selected for the Phase 7a project will be designed to provide approximately 3,700 afy to ensure adequate water supply for the new Phase 7a areas.

1.4.9 Operations and Maintenance

1.4.9.1 Gravel Cover

Once the Gravel Cover has been applied to the playa, limited maintenance will be required to preserve the gravel blanket. The gravel will be visually monitored for sand and dust accumulation, evidence of washouts, or inundation. If any of these conditions are observed over a substantial area, additional gravel will be transported to the playa. It is assumed that no maintenance will be needed in the initial years of operation. Subsequently, small areas may require replenishment and later, larger areas may require replacement. It is anticipated that the total volume of gravel on the Phase 7a areas may be replaced at most once every 50 years.

1.4.9.2 Shallow Flooding

To attain the required PM_{10} control efficiency, generally at least 75 percent of each square mile of the control area must be wetted to produce standing water or surface-saturated soil, between October 1 and June 30 of each year. Actual Shallow Flooding BACM requirements are set forth in the 2008 SIP. Surface saturation will continue to be monitored via satellite images (as is currently the practice). Maintenance activities will occur as needed throughout the year. However, when feasible, extended facility maintenance (repair of pumps, berms, laterals, and submains) will be completed during the period when dust storms generally do not occur (mid/late summer to early fall). Inflows, outflows and water quality in Shallow Flooding areas will also be monitored. Drains and valves will be inspected periodically and maintained as necessary.

1.4.9.3 Berms and Roadways

Berms and roadways will be continually maintained to prevent erosion and washout, and to maintain safe driving conditions. Maintenance activity will include minor earthwork and gravel replenishment.

1.4.9.4 Managed Vegetation

Vegetation will be monitored in the field to determine reclamation progress (declines in soil salinity), soil moisture, irrigation system function (including leak identification and repair), germination success, transplant mortality, and plant vigor. Once established, soil fertility and plant tissue will be monitored at least annually, and vegetative cover will be assessed with satellite imagery. At present, imagery is ground-truthed with specialized, near-surface digital images of vegetative cover. Operations activities will include maintenance of irrigation systems and replanting/reseeding as necessary.

1.4.9.5 Tillage

Tillage in DCA T12-1 is proposed as BACM Testing. Periodic wetting, re-tilling, and/or alterations in the configuration of the tilling will occur throughout the testing period. Operations activities will include maintenance of irrigation systems as necessary, as well as monitoring of surface conditions, meteorological parameters, and biological resources as part of the BACM test.

1.5 PHASE 7A SCHEDULE MILESTONES

Phase 7a project milestones are summarized in **Table 3**. The schedule is approximate and actual construction and operations start dates will depend on finalization of necessary permits and approvals.

Table 3
Phase 7a Project Milestones

Milestone	Anticipated Completion Date
Award engineering and design contract	May 2011
Design Completion	October/November 2011
LADWP Board approval of CEQA document	December 2011
California Department of Fish and Game issues Streambed Alteration Agreement	No later than March 2012
Lahontan Regional Water Quality Control Board issues permit	No later than March 2012
California State Lands Commission issues lease	No later than April 2012
Award construction contract	May 2012
Notice to Proceed for Construction	June 2012
Construction Completion	December 2013
Managed Vegetation Compliance	December 2015

1.6 APPLICABLE PLANS AND POLICIES

The project sites are located on CSLC-administered lands within Inyo County. The Inyo County General Plan designates the land use of the Phase 7a area as SFL (State and Federal Lands). The zoning overlay is OS-40 (Open Space, 40-acre lot minimum) (Inyo County, 2011).

1.7 PROJECT APPROVALS

The Phase 7a project to install, operate and maintain approved DCMs in the Phase 7a project areas is consistent with the 2008 SIP certified by GBUAPCD and the California Air Resources Board (CARB). Once implemented, the project will also be consistent with GBUAPCD Board Order 080128-01. Permits and approvals from other agencies are anticipated to include:

- A lease for use of state lands will be required from the CSLC prior to project construction.
- Consistent with the previous DCMs installed on Owens Dry Lake, a Lake or Streambed Alteration Agreement per Section 1602 of the Fish and Game Code will be sought from the California Department of Fish and Game (CDFG).

- LADWP will submit a request for an amendment to existing permit SPL-2008-00582-BAH from the US Army Corps of Engineers for Phase 7 to include construction, operations, and maintenance associated with Phase 7a.
- Construction of the Phase 7a project will be completed in compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES NO. CAS000002). Per the General Permit, a Storm Water Pollution Prevention Plan (SWPPP) incorporating best management practices (BMPs) for erosion control will be developed and implemented during project construction.
- Discharge of water to the lake for dust control is currently permitted by the Lahontan Regional Board through Waste Discharge Requirements (WDR) for the Southern Zones Dust Control Project (Board Order No. R6V-2006-0036). LADWP will submit an application for revision of the existing WDR or for a new WDR, as applicable.
- Use of the right-of-way for SR 136 for gravel transport will require approval from BLM and an encroachment permit from Caltrans.
- Additionally, installation of the fuel tank at the construction office to serve the haul trucks will require compliance with:

1) Permit to Operate (1316-00-06) – An air quality permit from GBUAPCD related to vapor recovery.
2) CUPA Facility Permit – A hazardous material/waste permit and associated contingency and business plan from the Inyo County Department of Environmental Health Services.
3) Spill Prevention Control and Countermeasure (SPCC) Plan – For aboveground oil tanks of 1,320 gallons or more, and for fuel trucks when fuel will be left in the truck overnight. The Plan is filed with the Inyo County Department of Environmental Health Services.

Section 2
Environmental Analysis

2.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☒ Greenhouse Gas Emissions	☐ Population and Housing
☐ Agricultural Resources	☐ Hazards and Hazardous Materials	☐ Public Services
☒ Air Quality	☐ Hydrology and Water Quality	☐ Recreation
☒ Biological Resources	☐ Land Use and Planning	☐ Transportation and Traffic
☒ Cultural Resources	☐ Mineral Resources	☐ Utilities and Service Systems
☐ Geology and Soils	☐ Noise	☒ Mandatory Findings of Significance

2.2 AGENCY DETERMINATION

On the basis of this initial evaluation:

☐ I find that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Signature: Charles C. Holloway   Title: Manager of Environmental Affairs

Printed Name: Charles C. Holloway   Date: 5/19/2011

2.3 ENVIRONMENTAL CHECKLIST

2.3.1 Aesthetics

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion: The Owens Valley is straddled by the eastern Sierra Nevada to the west and the Inyo Mountains to the east, with the Coso Range rising to the south. The valley floor is interspersed with small, rural communities (e.g., Cartago, Olancha, Keeler, Swansea, and Dolomite) surrounded by dry, desert environment with minimal vegetation. Under existing conditions, views of Owens Dry Lake are characterized by pockets of desert vegetation, limited vegetated areas related to seeps and springs and the Delta, vast areas of desert playa, mining operations, the brine pool (which fluctuates in size) and the existing system of dust control – bermed areas periodically filled with water, areas of managed vegetation and the internal roadway network (**Figures 8** and **9**).

a) and c) **Less than Significant Impact.** Under the Phase 7a project, areas of the lake that are currently primarily barren playa will be altered by installation of new DCAs (new Phase 7a areas) and areas that are currently Shallow Flooding DCAs will be altered by transition to a mix of Gravel Cover, Managed Vegetation, and Shallow Flooding (Transition Areas). The new Phase 7a project areas are located on dry lakebed which is desert grayish to light brown sand with pockets of dry vegetation (dry alkali meadow and shadscale). Views of the Transition Areas are of standing water; although at some times of the year the basins are drained. There are no major landform features or rock outcroppings in the lakebed. Views from adjacent roadways are described below:

- U.S. Highway 395 is the primary north-south motor vehicle route through the Owens Valley and eastern Sierra Nevada. Phase 7a areas T37-1 and T37-2 are adjacent and visible from Highway 395; areas T1A-3, T1A-4, T35-1 and T35-2 are within 2 miles. Motorists traveling northbound and southbound can view desert landscape and dry vegetation in the foreground, the Inyo Mountains in the distant background, and the Owens dry lakebed in middle-ground views.

Figure 8
Owens Dry Lake Aerial View

Source: LADWP, April 2011

Figure 9
Owens Dry Lake View of T37-1 from Highway 395

Source: MWH, November 2010

- SR 136 is a northwest-southeast route, used to access Death Valley National Park and U.S. 395. Phase 7a areas T32-1, T30-1, T28N, T28S, and T26 are adjacent and visible from SR 190. Motorists traveling northwest or southeast on SR 136 have mostly unimpeded views of the lakebed. Desert landscape and dry vegetation dominate the foreground, the lakebed can be seen in the middle-ground, and the Sierra Nevada creates a panoramic view in the distant background.

- SR 190 is the primary northeast-southwest route used to access Death Valley National Park from U.S. 395. SR 190 converges with SR 136 and forms the eastern boundary of Owens Dry Lake. Phase 7a areas T2-1, T5-1, and T5-3 are adjacent and visible from SR 190. Motorists traveling to the northeast or southwest have unimpeded views of the open lakebed. Desert landscape and dry vegetation can be seen in the foreground, the lakebed dominates the middle-ground, and the Sierra Nevada creates a panoramic view in the distant background.

Visual Impacts During Construction. Construction activities for the project include site preparation (excavation, soil conditioning, and land leveling), preparation of gravel stockpile areas, raised roadway and irrigation pipeline installation, installation of electrical and mechanical equipment related to the irrigation systems, installation of the geotextile and gravel layer, and planting activities. Throughout the construction period, additional vehicles including gravel haul trucks from the mines will be present on the lakebed. Views of the project site during construction will include over 100 vehicles – including dozers, scrapers, flatbed trucks, backhoes, water trucks, fuel trucks, gravel haul trucks, and light duty trucks. The level of construction activity required for Phase 7a will alter views of the project site. However, within the context of the construction and maintenance activity ongoing on the lakebed, the impact of ground disturbance associated with installation of project facilities will be temporary and less than significant on the visual character of the project site.

Visual Impacts During Operation. Under the Phase 7a project, 3.1 square miles of the lakebed that are currently primarily barren playa (new Phase 7a areas) will be altered by construction of Shallow Flooding, Managed Vegetation and Gravel DCMs. Additionally 3 to 4 square miles of areas that are currently Shallow Flooding DCAs will be transitioned to a mix of Gravel Cover, Managed Vegetation, and Shallow Flooding (Transition Areas). Once installed, views of the project site will be of approximately 1 square mile of gravel, less than 1.56 square miles of Shallow Flooding, 0.16 square miles of Managed Vegetation (plus portions of T37-1 and T37-2), and 0.33 square miles of Tillage; all areas will include access roadways. Additionally, 3 to 4 square miles of areas that are currently bermed and flooded will be altered to a mixture of gravel, flooding, and vegetation (**Figures 6** and **7**). No tall structures or other obstructions to scenic vistas are proposed as part of the project; the project will not alter or block scenic views of the Sierra Nevada, Coso and Inyo Mountains.

Gravel Cover. The project would alter the aesthetics of 3.1 square miles of currently barren playa and 3 to 4 square miles of existing Shallow Flooding. The approximately 1 square mile of new gravel plus the fraction of the 3 to 4 square miles of Transition Areas to be graveled will potentially use gravel from different sources. Gravel from the Shale Pit varies in color but is generally darker and browner than the much lighter dolomite limestone.

Under existing conditions, the barren playa can be described as grey to white with surrounding areas of brighter white (**Figure 9**). From a distance, the partially vegetated areas adjacent to and outside the historic lakebed appear darker in coloration.

Per the terms of the MOA between LADWP and GBUAPCD (1998), gravel used for dust control on Owens Dry Lake shall be comparable in coloration to the lakebed soils. Consistent with this requirement, shale and/or dolomite will be used that is complementary in color with the surrounding landscape to the maximum extent feasible.

Tillage. Area T12-1 was previously used as a Moat and Row test area. The area is lightly colored open land with some remaining darker linear areas. Once T12-1 is tilled, the overall color of the parcel may darken. Views of the area will be of serpentine swaths of tilled ridges with spacing between swaths allowing for irrigation installation and maintenance, as well as monitoring access. Use of a curved serpentine pattern will avoid creation of new straight-lined features on the lake. **Figure 10** is a photograph of Tillage on the lakebed from 2009.

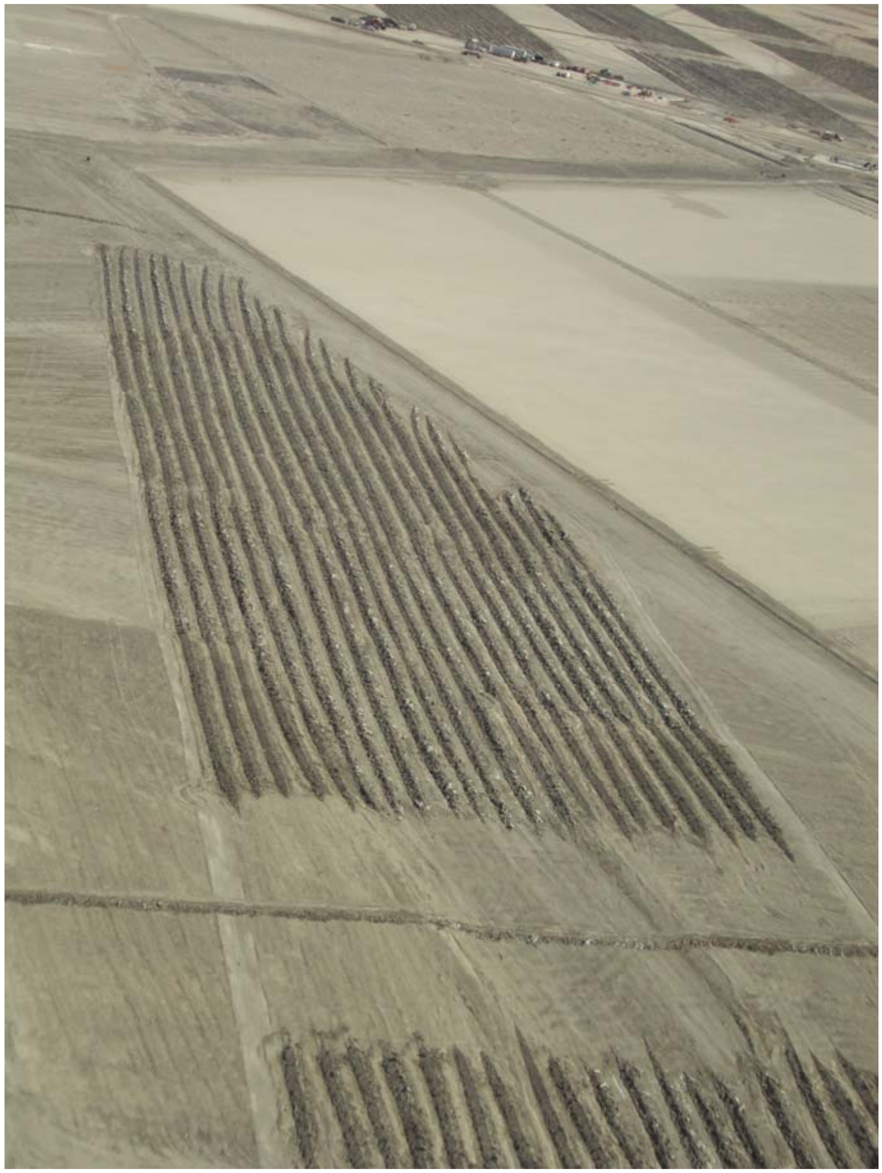
Managed Vegetation. Under Phase 7a, Area T32-1 (0.16 square miles), portions of T37-1 and T37-2, plus a fraction of the 3 to 4 square miles of Transition Areas will be vegetated. A mix of species, in addition to saltgrass, will be used in the Managed Vegetation areas. Views of T32-1, T37-1 and T37-2 are currently of partially vegetated sites; under Phase 7a, views will be of more densely vegetated parcels.

Shallow Flooding. Two new areas of Shallow Flooding (T1A-4 and T37-2) will be constructed under Phase 7a. Additionally, a fraction of the 3 to 4 square miles of Transition Areas will continue to be flooded. T1A-4 is currently barren playa immediately adjacent to existing Managed Vegetation. Views of T37-2 are of partially vegetated playa and barren playa. Once Shallow Flooding is installed, these areas will appear as saturated playa during the dust control period of the year.

Transition Areas. The 3 to 4 square miles of existing Shallow Flooding to be transitioned to BACM Hybrid will alter from views of open water to views of a mosaic of vegetation, water and gravel (**Figures 6** and **7**). Instead of a vast expanse of one BACM, these sites will be individually designed, with variable edges and transitions among areas of vegetation, gravel and water.

Implementation of DCMs on the lake has altered the views of the lakebed from dry playa with fluctuating sized brine pool to a managed system of bermed areas of water and vegetation and roadways. Due to the distance from off-lake viewers and the size of the Phase 7a areas in relation to the overall 110 square mile lakebed, views of the Phase 7a areas with additional gravel, vegetation, and shallow flooding installed will not change the dramatic backdrop or natural feel of the overall landscape of Owens Dry Lake. The Phase 7a project will expand the area of DCAs on the lake and would be visually consistent with existing facilities. Additionally, Phase 7a will improve the appearance of 3 to 4 square miles of existing Shallow Flooding areas by increasing the number of dust control methods used

Figure 10
Tillage on Owens Dry Lake



within one parcel and thereby varying the landscape and increasing the overall acreage of vegetation. Within the context of the existing views of DCMs on the lake, the aesthetic impacts of the Phase 7a project will be less than significant.

b) **Less than Significant Impact.** Scenic roadways are designated by BLM, Inyo National Forest, Caltrans, and the Federal Highway Administration. State Highway 395 is an officially designated State Scenic Highway from Independence to north of Tinemaha Reservoir (postmiles 76.5 to 96.9) (Caltrans, 2008). State Highway 395 is eligible for designation in the portions north and south of that segment (Caltrans, 2008). The project site is just east of State Highway 395 in the eligible, but not designated, portion of the roadway.

There are no trees, major landform features or rock outcroppings within the Phase 7a areas and none would be disturbed by project implementation. As discussed above, implementation of the project would alter the view of approximately 6 to 7 square miles of the lakebed. Installation of Gravel Cover, Shallow Flooding, and Managed Vegetation in the DCAs that are adjacent to SR 395 (T37-1 and T37-2) will alter the look of these parcels but will not change the dramatic backdrop or natural feel of the overall landscape. The impact on views from a portion of roadway eligible for designation as a scenic roadway, SR 395, is therefore less than significant.

d) **Less Than Significant Impact.** The proposed project does not include permanent installation of new sources of lighting. Construction activities will occur primarily in daylight hours; some limited use of lighting may be necessary in the early morning or evening hours (especially in winter). Use of portable lights during construction, if any, will be localized along a pipeline or other facility; large-scale activities such as grading will not occur at night. Since the proposed lighting will be of limited duration and confined to the specific area of construction, impacts on light and glare that could affect day or nighttime views of the project area will be less than significant. Protection of biological resources related to the potential use of limited lighting will be described in the EIR.

2.3.2 Agricultural and Forest Resources

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion:

a) **No Impact.** The Farmland Mapping and Monitoring Program (FMMP) does not include Inyo County; therefore the proposed project will have no impact on conversion of FMMP designated Farmland (California Department of Conservation, 2006).

b) **No Impact.** Existing zoning by Inyo County is OS-40 (Open Space, 40-acre lot minimum) with a land use designation of SFL (State and Federal Lands) (Inyo County, 2010). Since Inyo County does not offer a Williamson Act program (California Department of Conservation, 2008), the proposed project will have no impact on agricultural zoning or Williamson Act contracts.

c) and d) **No Impact.** The project site is not zoned as forested land and the proposed project will not result in conversion of forest land to non-forest use. Public Resources Code Section 12220 (g) defines "Forest land" as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Since no trees exist on the project site, removal of native trees is not proposed. Therefore, the proposed project will have no impact on forest lands.

e) **No Impact.** Active ranches are located near the lakebed – Horseshoe Livestock to the south and Islands and Delta Livestock, Lubkin Adjunct Livestock, and Mount Whitney Ranch north and west of the lake. The presence of livestock on the lake is limited to stray animals from adjacent leases. However, since the project does not include new fences, alter water distribution to the ranches or include haul routes across ranch properties, there will be no impact on agricultural operations from construction and operation of the Phase 7a project.

2.3.3 Air Quality

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion:

The southern Owens Valley is located within the jurisdiction of the GBUAPCD. The valley has been designated by the State and EPA as a non-attainment area for the state and federal 24-hour average PM_{10} standards. With the exception of PM_{10}, air quality is considered excellent and the area has been designated as attainment or unclassified for all other ambient air quality standards. Large industrial sources of air pollutants are absent from the Owens Valley. The major sources of criteria pollutants, other than wind-blown dust, are woodstoves, fireplaces, vehicle tailpipe emissions, fugitive dust from travel on unpaved roads, prescribed burning, and gravel mining.

a), b), c) **Potentially Significant Impact.** The relevant air quality plan for the project area is the Final 2008 Owens Valley PM_{10} Planning Area Demonstration of Attainment SIP (GBUAPCD, 2008a). The focus of this planning document is implementation of DCMs at Owens Dry Lake.

The Phase 7a project is a modification of the OLDMP described in the 2008 SIP. Therefore project consistency with the applicable air quality plan has not been described in previous environmental documents. The consistency of the Phase 7a project with the applicable air quality plan will be described in the EIR for the Phase 7a project.

Emissions during project construction will result from the operation of the equipment including: dozers, scrapers, dump trucks, flatbed trucks, fuel trucks, backhoes or tractors, water trucks, light duty trucks, and workers personal vehicles. Air pollutant emissions estimates for construction of the Phase 7a project and their potential cumulative effects have not been specifically described in other environmental documents. Air pollutant emission estimates will be quantified and described in the EIR for the Phase 7a project.

d) **Less Than Significant Impact.** Sensitive receptors include schools, day-care facilities, nursing homes, and residences. The closest sensitive receptors to the Phase 7a project areas are residences in Keeler, Swansea, Dolomite, Olancha and Cartago (see **Table 1**). Additionally, there is a residence at the Boulder Creek RV Park (located approximately 1.8 miles northwest at the intersection of U.S. 395 and Main Line Road). To the gravel haul routes, the closest receptors are in Dolomite (approximately 1 mile northeast of the Dolomite mine haul route), Swansea (approximately 0.7 miles north of the Dolomite mine haul route) and Keeler (0.8 miles to the LADWP Shale Pit haul route).

Construction of the proposed project will include operation of mechanical equipment. However, given the distance of residential sensitive receptors to the project sites, the impact from gas and diesel fumes associated with motor vehicles and heavy equipment engines on sensitive receptors will be less than significant. Implementation of the proposed project would greatly decrease the exposure of residents to PM_{10} emissions from the Owens Dry Lake in the long term, a beneficial effect.

e) **Less Than Significant Impact.** Project construction and operation will result in minor localized odors associated with fuel use for equipment and vehicles. These odors are common, not normally considered offensive, and will not be experienced by any residences since none are located on or immediately adjacent to the project sites. Odor impacts to potential recreation visitors at the sites during construction activities will be temporary and less than significant.

2.3.4 Biological Resources

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☒	☐	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Discussion: Prior to implementation of the Dust Control Project, Owens Dry Lake consisted of a large expanse of barren playa, a remnant hypersaline brine pool, and scattered springs and seeps along its shoreline. Implementation of DCMs has resulted in an increase in the use of Owens Dry Lake by many wildlife species as water and vegetation resources are now present on much of the former barren playa. Shallow Flooding has attracted large numbers of birds, primarily gulls, avocets, stilts and plovers (LADWP, 2010b).

a), b), c), d) **Potentially Significant Impact.** Based on California Natural Diversity Data Base (CNDDB), listings for the Vermillion Canyon, Owens Lake, Lone Pine, Dolomite, Bartlett, and Olancha USGS quadrangles, and LADWP knowledge of the areas, sensitive plant and animal species and sensitive natural communities have the potential to occur on or near the project areas. Additionally, a breeding population of Western Snowy Plover occurs on Owens Dry Lake and the lake is an important site along the Pacific Flyway for migratory waterbirds. Per the terms of previous mitigation measures, LADWP is required to maintain a baseline of at least 272 Snowy Plovers as determined during dedicated annual surveys

(GBUAPCD, 2003) and a minimum of 523 acres of Shallow Flooding habitat for Snowy Plovers in consultation with CDFG (GBUAPCD, 2008a). This habitat is described as a mix of exposed sandy or gravelly substrate suitable for nesting in close proximity to standing water equal to or less than 12 inches in depth; the 523-acre area has been designated along the east side of the lake.

The impact on sensitive biological resources from construction and operation of the Phase 7 project was assessed in the 2008 SIP EIR (GBUAPCD, 2008b). However, due to changes in the project description between Phase 7 and Phase 7a, the impacts of the Phase 7a project on sensitive species and natural communities will be described in the EIR for the project.

e) **Less Than Significant Impact.** No tree ordinances apply to the project area and no trees are present on the project site. The Inyo County General Plan Goals and Policies document (2001) includes two goals for biological resources issues: Maintain and enhance biological diversity and healthy ecosystems throughout the County, and provide a balanced approach to resource protection and recreation use of the natural environment (Goals BIO-1 and BIO-2). Since the project site will remain as open space and will continue to provide habitat for Snowy Plovers and other species, the project will not conflict with these goals. The impact on local policies or ordinances protecting biological resources is less than significant. Additional description of biological resources of the Phase 7a parcels including the BACM Hybrid areas will be provided in the EIR for the Phase 7a project.

f) **Less Than Significant Impact.** The project site is not within a Significant Natural Area (SNA) as determined by CDFG. LADWP is currently preparing a Habitat Conservation Plan (HCP) for LADWP-owned lands in Inyo and Mono Counties; this plan is not yet finalized but would not cover the Phase 7a portion of Owens Dry Lake since it is property of the CSLC. However, in compliance with mitigation measure Biology-14 of the 2008 SIP FSEIR (GBUAPCD, 2008b), LADWP prepared the Owens Lake Habitat Management Plan (OLHMP) for the Owens Lake Dust Mitigation Project (LADWP, 2010b). The OLHMP serves as a guide for compatibility between construction, maintenance, and operational needs of the Dust Mitigation Project under the 2008 SIP FSEIR, and the needs of resident and migratory wildlife resources utilizing the Owens Dry Lake Dust Control Area. The overall goal of the OLHMP is to avoid direct and cumulative impacts to native wildlife communities that may result from the Dust Control Program. The Phase 7a project will be implemented by LADWP in a manner consistent with the LADWP OLHMP; the impact on adopted habitat plans is therefore less than significant.

Additionally, LADWP is currently working collaboratively with a wide range of stakeholders to develop a Master Plan for Owens Lakebed. The Master Plan will identify goals and objectives to enhance the Owens Lakebed with a focus on dust mitigation, habitat and wildlife, water efficiency methods, and potential renewable energy development. Although the Master Plan is not an approved habitat conservation plan, the consistency of the proposed project with the Master Plan will be described in the EIR for the Phase 7a project.

2.3.5 Cultural Resources

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Discussion: Prehistoric and historic cultural resources have been previously identified on Owens Dry Lake. Additionally, the lake area is mapped as Quaternary lake and sand deposits, edged by Quaternary alluvium (Mathews and Burnett, 1965, Streitz and Stinson, 1974). The older Pleistocene and late Holocene portion of each geological unit is considered to have moderate sensitivity for paleontological resources.

Field survey for observable cultural resources on the Phase 7 parcels was completed previously. Pedestrian survey of Phase 7a project areas that were not previously surveyed (i.e., pipeline alignments) and consideration of the impacts to known and previously recorded cultural resources is ongoing.

a), b), c), d) **Potentially Significant Impact.** Construction of Phase 7a project facilities will include earthwork in areas that have not been previously disturbed for construction of DCMs. The project may also require reconfiguration of existing berms and installation of new infrastructure such as irrigation pipelines and drainlines. Disturbance to cultural resources potentially present in Phase 7a project areas from project construction is a potentially significant impact. The existing setting for cultural resources, results of record searches and pedestrian surveys, results of ongoing evaluations of known resources, and the significance of potential impacts to cultural resources will be described in the EIR for the Phase 7a project.

2.3.6 Geology and Soils

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems, where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion:

The project area is on Owens dry lakebed, just south of Lone Pine in the Owens Valley. The Owens Valley of eastern California is a deep north-south trending basin, lying between the Sierra Nevada to the west and the White-Inyo Mountains to the east. The Owens Valley was formed as a fault block basin with the valley floor dropped down relative to the mountain blocks on either side.

The Owens Valley is the westernmost basin in a geologic province known as the Basin and Range, a region of fault-bounded, closed basins separated by parallel mountain ranges stretching from central Utah to the Sierra Nevada and encompassing all of the state of Nevada. Geological formations in the project areas are of Cenozoic age, chiefly Quaternary.

The soils in Owens Valley contain mostly Quaternary alluvial fan, basin-fill, and lacustrine deposits (Miles and Goudy, 1997). On alluvial fans, the soils are mostly Xeric and Typic

Torrifluvents, Xeric and Typic Torriorthents, and Xeric and Typic Haplargids (Miles and Goudy, 1997). All soils on alluvial fans are well drained (Miles and Goudy, 1997).

a)-i) and a)-ii) **Less Than Significant Impact.** The west side of the Basin is bounded by a north-south trending fault zone along the east side of the Sierra Nevada known as the Sierra Nevada Frontal fault (Stone, et. al., 2000). The east margin of the Basin is delineated by the Inyo Mountains fault, which is a belt of west-side-down normal faults along the Inyo Mountains (Hollett, et. al., 1991; Neponset, 1999). Roughly in the middle between the Inyo Mountains fault and Owens Valley fault is the Owens River fault (Neponset and Aquila, 1997). To the south, a number of unnamed fault segments were mapped in front of the Coso Range (Stinson, 1977; Hollett, et. al., 1991).

The Phase 7a DCAs are located on USGS quadrangles which include designated Alquist-Priolo Special Studies Zones. Surface rupture on local faults is also possible outside of the currently mapped active traces of these range-front faults. However, since permanent habitable structures will not be built as part of the proposed project, people will not be exposed to adverse effects involving seismic ground shaking. Damage to project facilities (irrigation lines, drainlines, turnouts, roadways, geotextile membranes or gravel layers) would be repaired as necessary; impacts will therefore be less than significant.

a)-iii) **Less Than Significant Impact.** The project does not expose people to potential substantial adverse effects involving strong seismic-related ground failure, including liquefaction. Shallow groundwater does occur on the lake and the Phase 7a project includes new areas of Shallow Flooding. However, since permanent habitable structures will not be built as part of the proposed project, people will not be exposed to adverse effects involving seismic-related ground failure. Damage to project facilities (irrigation lines, drainlines, turnouts, roadways, geotextile membranes or gravel layers) would be repaired as necessary; impacts will therefore be less than significant.

a)-iv) **Less Than Significant Impact.** The project site is located well away from the mountain front, which has slopes steep enough to initiate a landslide during an earthquake. Additionally, since permanent habitable structures will not be built as part of the proposed project, people will not be exposed to adverse effects involving landslides. Damage to project facilities (irrigation lines, drainlines, turnouts, roadways, geotextile membranes or gravel layers) would be repaired as necessary; impacts will therefore be less than significant.

b) **Less Than Significant Impact.** Construction activities for the Phase 7a project include site preparation (excavation, soil conditioning, and land leveling), preparation of gravel stockpile areas, raised roadway and irrigation pipeline installation, installation of electrical and mechanical equipment related to the irrigation systems, installation of the geotextile and gravel layer, and planting activities. Earthwork required for construction has the potential to temporarily increase soil erosion from the disturbed areas. However, since construction methods will include BMPs identified in a SWPPP completed in compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit), wind and water erosion of soils during construction will be minimized. Therefore, the impact is less than significant.

The intent of installing Gravel Cover, Shallow Flooding, and Managed Vegetation on the lakebed is to stabilize soils in an effort to reduce soil erosion via wind. Therefore, the Phase 7a project will have a beneficial effect during project operation by reducing soil erosion.

c) **Less Than Significant Impact.** New structures included in the Phase 7a project (irrigation lines, drainlines, turnouts, roadways, geotextile membranes, etc.) may be located on lakebed soils that are considered unstable. Prior to final design of new facilities, geotechnical investigations will be conducted and fill soils, armoring, and potentially other design features will be used where warranted. Since no permanent habitable structures will be built as part of the proposed project, the impact will be less than significant.

d) **No Impact.** Permanent habitable structures will not be built as part of the proposed project. Therefore, there will be no project-related impacts from expansive soils.

e) **No Impact.** Sanitation facilities are not present or proposed for the project site. Therefore, there will be no impact on soils related to wastewater disposal.

2.3.7 Greenhouse Gas Emissions

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

Discussion: LADWP has instituted numerous programs for reducing GHG emissions, such as providing rebates to encourage use of energy efficient equipment, retrofitting City-owned facilities for increased energy efficiency, promoting the installation of solar and renewable power, and reducing GHG from vehicles by pursuing electric fleet vehicles.

a), b) **Potentially Significant Impact.** Greenhouse gases include, but are not limited to, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Project-related emissions of greenhouse gases will include air pollutants generated from construction vehicles during the temporary construction activities. Operations-related air pollutant emissions would result from maintenance activity (creating vehicle emissions). Otherwise, operation of the project has no air pollutant emissions; the project reduces the emissions of dust from the Owens dry lakebed.

Since the air pollutant emissions related to Phase 7a construction and operation have not been quantified, greenhouse gas emissions and the consistency of the project with planning documents focused on the reduction of greenhouse gas emissions will be described in the EIR for the Phase 7a project.

2.3.8 Hazards and Hazardous Materials

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Discussion: Aside from fuels, hazardous materials are not currently used or stored on the project site. Fertilizer is stored on the lakebed in a contained area at existing Managed Vegetation DCA T5. Fertilizer is used as necessary for the existing T5 – T8 Managed Vegetation DCAs.

a) and b) **Less Than Significant Impact.** Construction of the proposed project will require the routine transport, use, and storage of limited quantities of gasoline and diesel fuel, and potentially degreasers and solvents for construction vehicle maintenance. The existing LADWP Sulfate Facility is located off Sulfate Road west of SR 136, on the east side of the lake. This facility includes a vehicle wash station, refueling station, and fuel tanks as well as areas for vehicle maintenance. Additionally, the two vehicle and equipment staging areas previously used (for Phases 7 and 8) will be used for Phase 7a. These previously disturbed sites are located near the intersection of Main Line Road and Corridor 1 at the north end of the lake (20 acre site) and at the southern end of the lake adjacent to Dirty Socks Access

Road (2.7 acre site). In addition to office trailers and equipment and vehicle storage, these areas will have fueling stations for gas and diesel. Fuel trucks will be used to refuel construction equipment (including the low ground pressure gravel trucks) and the long haul gravel trucks; no vehicle fuels or oils will be stored in the gravel stockpile areas. Additional permanent fertilizer storage for the proposed Managed Vegetation areas is not proposed under Phase 7a. Portable fertilizer tanks will be used to deliver fertilizer to concrete pads with containment. Other chemical use is not anticipated.

LADWP will employ standard operating procedures for the routine transport, use, storage, handling, and disposal of hazardous materials related to the operation of the DCMs. LADWP also prepares an annual update on the transport, use, storage, handling, and disposal of hazardous materials. Therefore, with adherence to the standard operations procedures for hazardous materials use, impacts related to release or accidental exposure to humans or the environment will be less than significant.

Water will be used during project construction for dust control but water will not be used in volumes sufficient to cause standing water. During project operation, water will be used to irrigate areas of Managed Vegetation and for Shallow Flooding. Since the Phase 7a project will be water neutral, the overall area of standing water on the lakebed will not significantly increase. Creation of mosquito habitat by the creation of standing water will be managed as under existing conditions. LADWP has an annual contract with the Inyo County Agricultural Department which manages the Owens Valley Mosquito Abatement Program. The Agricultural Commissioner will be notified of the changes in the Shallow Flooding DCAs prior to project operation. Since these mosquito abatement practices will continue and since the Phase 7a project does not substantially increase the area of mosquito habitat, the impact related to vectors is less than significant.

c) **Less Than Significant Impact.** There are no schools within ¼ mile of the Phase 7a project area. The closest school is located in Lone Pine (over 5 miles north of the Phase 7a DCAs). Additionally, hazardous materials use will be limited to fuels for construction vehicles. Since these materials will be properly handled (as described above), the impact on the schools from hazardous materials will be less than significant.

d) **No Impact.** Section 65962.5 of the California Government Code requires the California Environmental Protection Agency (CalEPA) to update a list of known hazardous materials sites, which is also called the “Cortese List.” The sites on the Cortese List are designated by the State Water Resources Control Board, the Integrated Waste Management Board, and the Department of Toxic Substances Control.

Based on a search of hazardous waste and substances sites listed in the Department of Toxic Substances Control (DTSC) “EnviroStor” database; a search of leaking underground storage tank (LUST) sites listed in the State Water Resources Control Board (SWRCB) “GeoTracker” database; and a search of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit, there were no sites listed on or adjacent to the project site. Therefore, the project will have no impact related to hazardous waste sites.

e) and f) **No Impact.** Seven public access airports and six private airstrips are located throughout Inyo County (Inyo County, 2001). The Lone Pine Airport is closest to the project site; it is located approximately 3.6 miles to the north. However, the project does not propose new tall structures and the project area is not located sufficiently near either a private airstrip or public airport to pose a safety risk. Therefore, there will be no project-related impacts on airport safety.

g) **Less Than Significant Impact.** Internal Owens Dry Lake roadways are not part of an emergency evacuation plan route and therefore construction and operation activities on the lake would have no impact on a designated emergency route. Gravel transport necessary for the Phase 7a project would require gravel trucks to cross SR 136 (from the F.W. Aggregate or the LADWP Shale Pit) (**Figure 4**) which will be coordinated with Caltrans. However, since Owens Dry Lake is not designated as an emergency staging area, the project will have a less than significant impact on emergency access and evacuation plans.

h) **Less Than Significant Impact.** The project area is not typically subject to wildland fires and the project site has only limited areas of vegetation. Permanent habitable structures do not exist and none are proposed for the project site. Since 2006, fire protection services have been provided by the California Department of Forestry (CDF) and Owens Dry Lake is included in their State Responsibility Area (SRA). The new areas of Gravel Cover would not alter the existing low risk of fire and areas of Shallow Flooding would reduce the risk. Managed Vegetation areas would be irrigated. Therefore, the project will have a less than significant impact related to wildland fires.

2.3.9 Hydrology and Water Quality

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

Discussion: The floor of the Owens Valley ranges in elevation from a low of approximately 3,550 feet above mean sea level (MSL) on the Owens dry lakebed to the south to approximately 4,100 feet above MSL near Bishop to the north. Topographically, the bed of Owens Dry Lake is relatively flat with only 50 feet of topographic relief from the historic shore to the lowest portion of the lakebed. The lakebed can be divided into two main areas: the brine pool (below an elevation of 3,553.53 MSL) and the playa (the area between the brine pool and the historic shoreline at 3,600 MSL). The playa generally consists of lacustrine and alluvial sediments ranging in size from fine gravels to clays and containing a high salt content. The brine pool is the remnant portion of the historic Owens Lake and contains a high accumulation of mineral salts. The brine pool is generally wet during part of the year, depending on the amount of precipitation and runoff from the surrounding mountains.

a) and f) **Less than Significant Impact.** Beneficial uses and water quality objectives are specified in the Water Quality Control Plan for the Lahontan Region (Basin Plan) prepared by the Lahontan Regional Water Quality Control Board (Regional Board, 2005). Relevant to the project site, beneficial uses are designated for Owens Lake and Owens Lake wetlands (**Table 4**).

Table 4
Beneficial Uses of Owens Lake

Surface water	**MUN**	**AGR**	**GWR**	**REC-1**	**REC-2**	**COMM**	**WARM**	**COLD**	**SAL**	**WILD**	**WQE**	**FLD**
Owens Lake				X	X	X	X	X	X	X		
Owens Lake Wetlands	X	X	X	X	X		X	X		X	X	X

MUN – municipal and domestic supply; AGR – agricultural supply; GWR – groundwater recharge, REC-1 – water contact recreation; REC-2 – noncontact water recreation; COMM – commercial and sportfishing; WARM – warm freshwater habitat; COLD – cold freshwater habitat, SAL – inland saline water habitat; WILD – wildlife habitat, WQE – water quality enhancement; FLD - flood peak attenuation/flood water storage.
Source: Regional Board, 2005.

Waterbody-specific numeric objectives for the protection of these beneficial uses are not specified in the Basin Plan for Owens Lake. However, narrative and numeric water quality standards applicable to all surface waters (including wetlands) in the region are applicable for: ammonia, coliform bacteria, biostimulatory substances, chemical constituents, total residual chlorine, color, dissolved oxygen, floating materials, oil and grease, non-degradation of aquatic communities and populations, pesticides, pH, radioactivity, sediment, settleable materials, suspended materials, taste and odor, temperature, toxicity, and turbidity.

Discharges associated with operation of the proposed project would be of Los Angeles Aqueduct or Lower Owens River water to the DCAs. The quality of these sources would not violate applicable narrative or numeric water quality standards. The existing DCAs are operated under Board Order No. R6V-2006-0036, Revised Waste Discharge Requirements (WDRs) for the Southern Zones dust control project. Monitoring is conducted and reported semi-annually; the Southern Zones dust control project is in compliance with the adopted WDRs.

Extensive groundwater dewatering is not anticipated to be required for project construction or operation. However, if groundwater dewatering is required, water would be discharged to an existing DCA or to the lakebed surface, therefore there will be no project-related impacts related to dewatering discharges.

During project construction, disturbance to surface soils will result from land leveling, raised roadway construction, irrigation system installation, and preparation of gravel stockpile locations. Since site disturbance would exceed 1 acre, during construction, stormwater will be managed in accordance with BMPs identified in a SWPPP completed in compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit). With implementation of the required SWPPP, potential increases of sediment load in stormwater will not adversely affect surface water beneficial uses and impacts will therefore be less than significant. The impact on water quality will be less than significant.

b) **Less than Significant Impact.** Construction of the project, and maintenance activities including gravel replenishment, will require the use of water trucks to control fugitive dust. Water trucks will be filled from existing J stands off the Main Line pipeline; the water source is the Los Angeles Aqueduct and therefore originally Owens Valley surface or groundwater. Otherwise, construction and operation of the Phase 7a DCMs will not require the use of groundwater. Since the geotextile to be used for the Gravel Cover areas is permeable, the project will not substantially alter groundwater recharge at the site. Additionally, since the project is essentially water neutral, Phase 7a will not result in an overall increase of water applied to the lake. Therefore, impacts on groundwater will be less than significant.

c), d), and e) **Less than Significant Impact.** Construction of the raised roadways around the new Phase 7a DCAs will alter the existing stormwater drainage pattern in the immediate area of the DCA. However, as under existing conditions, stormwater will continue to flow to the brinepool. Modifications in the drainage pattern resulting from the project will not result in substantial erosion or siltation, flooding, or add a substantial source of polluted runoff. Since the drainage pattern from the project sites flows in the same direction as existing conditions and eventually to the brine pool, the impact on drainage pattern and stormwater drainage will be less than significant.

g) and i) **No Impact.** A 100-year floodplain has been delineated on the Owens River and most of Owens Dry Lake below the historic shoreline (Federal Emergency Management Agency [FEMA], 1986). Therefore, most of the Phase 7a DCAs are located within the mapped 100-year floodplain. However, no permanent habitable structures are proposed as part of the project. The redirection of flood flows will not risk habitable structures since none are present on the lake. No levees or dams are present on the project sites and no off-site levees or dams will be modified as part of project implementation. Therefore, the project will have no impact on housing or structures in a 100-year flood hazard area.

h) **Less than Significant Impact**. Raised roadways will protect the Phase 7a DCAs from inundation and washout and, as under existing conditions, stormwater will flow towards the brine pool. New raised roadways will be constructed around new 7a DCAs: T1A-3, T1A-4, T32-1, T37-1, and T37-2. Since flows will continue, as under existing conditions, to flow to the brine pool, the impacts on redirection of flood flows will be less than significant.

j) **Less than Significant Impact.** Due to the distance to the ocean, tsunami risk is not relevant for the proposed project. Depending on volume conditions, localized seiche of the brine pool is possible but would not expose people or structures to loss, injury or death. Due to the low relief of the Owens Dry Lake area, mudflows are not likely, and would not impact permanent habitable structures since none are present. Since earthquake-induced damage to irrigation lines, drainlines, turnouts, roadways, geotextile membranes or gravel layers could be readily repaired by re-installing the facilities, the impact is less than significant.

2.3.10 Land Use and Planning

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

Discussion:

a) **No Impact.** The proposed project is located in an area zoned for open space and with a General Plan designation of State and Federal Land (SFL) (Inyo County, 2011). The closest communities to the Phase 7a project areas are located outside the historic Owens lakebed (**Table 1**). No permanent habitable structures are located on or immediately adjacent to the project site, and none are planned as part of the proposed project. Therefore, there will be no project-related impacts on established communities.

b) **Less Than Significant Impact.** Use of the Phase 7a project areas for dust control is considered relevant to CSLC, Inyo County, GBUPCD, and BLM planning. As discussed below, the Phase 7a project would be consistent with existing land use plans and policies and project-related impacts on land use would therefore be less than significant.

The Phase 7a project area is located on historic Owens lakebed owned and operated in trust for the people of the State of California by the CSLC. A lease from CSLC would be required in order to install DCMs on the Phase 7a property. No other land use approvals would be required. In granting the lease, CSLC would consider the Public Trust Doctrine. Public Trust Doctrine embraces the right of the public to use the navigable waters of the State for bathing, swimming, boating, and general water-related recreational purposes (CSLC, 2007). Additionally, the Public Trust Doctrine is sufficiently flexible to encompass changing public needs, such as to include the preservation of the lands in their natural state for scientific study, as open space and as wildlife habitat (CSLC, 2007).

GBUAPCD's 2008 SIP SEIR found that the proposed 15.1 square miles of DCMs would be consistent with public trust values of the Public Trust Doctrine since the dust program would maintain the current open space and assist in the natural resource preservation, while maintaining recreational opportunities. For the Phase 7a areas, installation of Gravel Cover, Managed Vegetation, Shallow Flooding, and BACM Hybrid will not substantially alter site access for public recreation. The Phase 7a project is a part of the larger Owens Lake Dust Mitigation Program with the goal of reducing air pollutant emissions for the protection of public health. Since the lake has only a variably-sized brine pool, it is not currently a navigable waterway; installation of Phase 7a project facilities would not alter that condition. Additionally, the Phase 7a project does not constitute an irrevocable change in land use – at some point in the future if other dust mitigation concepts are identified and implementable, areas of flooding, managed vegetation, and gravel could be removed and the sites could be returned to existing conditions or other conditions as required to control dust emissions.

Inyo County General Plan. The Land Use Element of the Inyo County General Plan (2001) includes Policy LU-5.6 State and Federal Lands Designation (SFL). This designation applies to those State- and Federally-owned parks, forests, recreation, and/or management areas that have adopted management plans. The Conservation/Open Space Element of the Inyo County General Plan (2001) includes Policy REC-1.2 Recreational Opportunities on Federal, State, and LADWP Lands: Encourage the continued management of existing recreational areas and open space, and appropriate expansion of new recreational opportunities on federal, state, and LADWP lands. Once project facilities are installed, the sites would remain as open space - no fences, barriers, or other obstructions are proposed. Temporary (during the approximately 18-month construction period) and site specific restrictions in on public access for recreation may be required to maintain public and worker safety.

GBUAPCD State Implementation Plan. The 2008 SIP addressed the placement of 15.1 square miles of DCMs on Owens Dry Lake including 9.2 square miles of Shallow Flooding, 3.5 square miles of Moat and Row DCMs, 0.5 square mile of channel area that may require DCMs, and 1.9 square miles of Study Area of which some or all may require controls after 2010. The currently proposed Phase 7a project would reduce dust emissions on these previously identified areas using currently approved BACM and Tillage (which has been previously approved as an interim measure). Therefore, the project is consistent with the SIP developed by GBUAPCD for the purpose of mitigating air pollutant conditions in the Owens Valley Planning Area (GBUAPCD, 2008a).

U.S. Bureau of Land Management. The new Phase 7a project areas do not overlap with the 15,790-acre Bishop Resource Management Plan Owens Lake Management Area managed by BLM; the Ridgecrest Resource Area of the California Desert Conservation Area managed by BLM per the California Desert Conservation Area Plan (CDCAP); or the wilderness areas, national parks, and national preserve managed by BLM under the California Desert Protection Act. The T30 potential Transition Areas are partially located on private and BLM land. Existing agreements are in place for dust control; alteration of the method of dust control on these same parcels is anticipated to be consistent with the existing agreements. Accordingly, impacts on BLM land use plans and policies will be less than significant.

c) **Less than Significant Impact.** Please see Section 2.3.4 Biological Resources, item f.

2.3.11 Mineral Resources

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☒	☐

Discussion: Mineral resources are defined as naturally occurring materials in the earth that can be utilized for commercial purposes (Inyo County, 2001). The Owens Lake Planning Area contains known mineral resources of statewide or regional importance. U.S. Borax (parent company Rio Tinto Mining) mines evaporite minerals from approximately 16,000 acres of leased land on the west side of the lake. Minerals mined include trona (hydrated sodium bicarbonate carbonate), burkeite (silicate) and halite (sodium chloride). Because minerals are mined from the surface, the facility is sensitive to surface water changes on the lake.

Other important mineral resources surrounding the Owens Dry Lake area include gravel deposits associated with alluvial fans and sand deposits associated with the Owens River and local dunes.

Inyo County is the Lead Agency for the processing of surfacing mining reclamation plan applications on private lands, Inyo County's Road Department, City of Los Angeles, and California Department of Transportation borrow pits, and surface mining on federally administered lands. All surface mining operations that disturb greater than 1 acre or move more than 1,000 cubic yards or more are required to have an approved reclamation plan before the start of mining activity. Reclamation plans are required by the Surface Mining and Reclamation Act (SMARA) to assure that:

- Adverse environmental effects are prevented or minimized and mined lands are reclaimed to a useable condition readily adaptable for alternate land uses.
- Production and conservation of minerals are encouraged, while considering recreation, watershed, wildlife, aesthetic, range and forage values.
- Residual hazards to public health and safety are eliminated.

LADWP's Shale Pit has an approved Reclamation Plan on file with the County and reviewed by BLM (2005-03/LADWP).

a) and b) **Less Than Significant Impact.** At its closest point, the northern part of the U.S. Borax lease is approximately 0.4 miles east of T37-2. The southern part of the lease is adjacent to T16 (existing Shallow Flooding DCA) and T1A-4 (proposed for Shallow Flooding under the Phase 7a project). The active mining operations are located northwest of DCA T11. The operations west of proposed DCA T1A-4 are inactive or in the process of being reclaimed.

The closest Phase 7a project areas to active mining operations are T1A-3 (proposed for Gravel Cover) and T1A-4 (proposed for Shallow Flooding). Construction activity required for the implementation of the Phase 7a project would occur adjacent to, but not on, the active mining operations. On-lake mining operations are sensitive to shallow groundwater volume changes. However, T1A-3 is proposed for Gravel Cover and therefore will not alter water conditions adjacent to the mining operations. T1A-4 is proposed for Shallow Flooding, but will be surrounded by a raised roadway which will also serve to contain water on site. Given the low permeability of lake surface clays and the reduction in Shallow Flooding proposed as part of the Transition Areas (including T1A-2_a), the project would not be anticipated to significantly alter shallow groundwater conditions. Project-related impacts to known mineral resources on Owens Dry Lake will be less than significant.

Implementation of the project includes use of local mineral resources. Approximately 1.4 million tons of gravel will be distributed within T1A-3, T37-1, T35-1, T35-2 and several Phase 7a Transition Areas. Gravel will likely be obtained from local gravel production operations such as the LADWP Shale Pit and the F.W. Aggregate Dolomite mine (**Figure 4**). Ample aggregate is available from these sources for the project. Three subareas of the Dolomite mine (Durability, North Pole, and Translucent) total approximately 480 acres and are able to produce up to 50 million tons (T. Lopez, pers. comm., June 25, 2010). The LADWP Shale Pit (State Mine ID Number 91-14-0130) is currently permitted for 40 acres of development (approximately 200,000 – 400,000 tons of shale), with potential for expansion. The proposed project will include the use of locally-important mineral resources, but will not result in a substantial loss of availability of the resource. Since mineral resources will still be available, impacts on mining operations adjacent to Owens Dry Lake will be less than significant.

2.3.12 Noise

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion: Owens Dry Lake is located in a remote area of the upper Mojave Desert where the main sources of noise are the mining operations on the lakebed, construction and maintenance activities related to the DCMs, and roadway noise along U.S. 395, SR 190, and SR 136. Sensitive noise receptors in the Owens Dry Lake area include residents in the communities of Lone Pine, Dolomite, Swansea, Keeler, Olancha, Cartago, and Bartlett.

Per the Public Safety Element of the Inyo County General Plan (2001), the normally acceptable noise level for residential properties ranges up to 60 Ldn and conditionally acceptable noise level ranges up to 70 Ldn. The term "Ldn" refers to the average sound exposure over a 24-hour period. Ldn values are calculated from hourly Leq values, with the Leq values for the nighttime period (10:00 p.m. to 7:00 a.m.) increased by 10 dB to reflect their greater disturbance potential.

a) and d) **Less Than Significant Impact.** The closest noise receptors to the Phase 7a project areas are residences in Keeler adjacent to T26; from the boundary of T26, the closest structure in Keeler is approximately 1,150 ft away. There are also residences in Cartago approximately 1 mile from T1A-2_a. Along the gravel haul route from the mines, aside from LADWP's Sulfate Facility, the closest noise receptors would be the residents in Keeler (located approximately 0.8 miles northwest from where the haul trucks will cross SR 136 going to and from the LADWP Shale Pit) and Swansea (approximately 0.7 miles from the

Dolomite mine haul route). The closest school is in Lone Pine, over 5 miles north of the Phase 7a DCAs.

During construction of the Phase 7a project, noise will be generated from dozers, flatbed trucks, water trucks, and dump trucks at the Phase 7a DCAs and along the gravel truck haul routes. Noise will be noticeable to on-lake workers and potentially persons visiting the lake for recreation. The minimum distance of 1,000 feet between residents and the Phase 7a areas is generally considered sufficient distance to reduce noise generated from construction activities. For example, construction equipment emitting 90 dBA at 50 feet would attenuate to 64 dBA at 1,000 feet (Canter, 1977). Additionally, construction activity will generally not occur during 10:00 p.m. to 7:00 a.m. when there is greater potential for noise disturbance to residences. Therefore, given the distance from the project site and the haul routes to sensitive residential receptors, the project will not cause noise levels to exceed established thresholds and noise impacts will be less than significant.

[Potential noise impacts on biological resources related to project construction and operation will be described in the EIR.]

b) **Less Than Significant Impact.** Equipment used for project construction may create minor groundborne vibration or groundborne noise. Since the closest buildings are over 1,000 feet away, impacts related to temporary groundborne vibration or noise will be less than significant.

c) **Less Than Significant Impact**. Noise generated during project operation will include equipment noise related to periodic maintenance activities necessary for proper operation of pumps, pipelines, roadways, and other infrastructure as well as for replenishment of gravel. As maintenance operations are on-going at the lake, operations-related noise will be similar to existing conditions. Since fewer trucks will be required, the noise impact will be less than that for project construction. Due to the distance to the nearest receptors, noise impacts from project operation will be less than significant.

e) and f) **No Impact.** Seven public access airports and six private airstrips are located throughout Inyo County (Inyo County, 2001). The Lone Pine Airport is the closest public access airport to the project site; it is located approximately 3.6 miles north of the lakebed. Therefore, the project is not located sufficiently near either a private airstrip or public airport to expose people residing or working in the area to experience excessive noise levels. There will be no project-related impacts on noise near an airport/airstrip.

2.3.13 Population and Housing

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

a) **Less Than Significant Impact.** Since the project does not include construction of homes or businesses, it will not directly impact population growth in the Owens Dry Lake area. However, construction of the project will require approximately 200 workers working in the area for approximately 18 months. These workers may be LADWP staff or a mix of LADWP staff and contractors. Additional workers would be required after initial construction to develop and maintain areas of Managed Vegetation. This number of workers over the construction period would have a less than significant impact on population growth.

b) and c) **No Impact.** No permanent habitable structures are located on or immediately adjacent to the Phase 7a project site, and none are planned as part of the proposed project. Therefore, there will be no impacts on housing from implementation of the Phase 7a project.

2.3.14 Public Services

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Discussion:

a)i **Less Than Significant Impact**. The project area has only limited areas of vegetation and therefore limited fuel for fires; permanent habitable structures do not exist and none are proposed for the project site. Since 2006, fire protection services have been provided by CDF and Owens Dry Lake is included in their SRA. The new areas of Gravel Cover would not alter the existing low risk of fire and areas of Shallow Flooding would reduce the risk. Managed Vegetation areas would be irrigated. Therefore, the project will have a less than significant impact related to provision of fire suppression services.

a)ii – a)v **No Impact.** Permanent habitable structures are not present on the project site and none are proposed as part of the project. The limited number of construction workers required to implement the project would not generate substantial population growth or create the need for new or expanded public services. Therefore, there will be no project-related impacts on police protection, schools, parks, or other public facilities.

2.3.15 Recreation

	Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion:

a) **No Impact.** Permanent habitable structures are not present on the project site and none are proposed as part of the project. The number of construction workers required to implement the project would not generate substantial population growth or create the need for new or expanded parks. Therefore, the project will have no impact on neighborhood or regional parks or other recreation facilities.

b) **No Impact.** The project does not include the construction of recreational facilities or generate population growth that would require the construction or expansion of recreational facilities. Therefore, there will be no impact on recreational facilities. However, the Owens dry lakebed is openly accessible to the public for recreation. During construction of the Phase 7a project, access may be temporarily limited if determined by LADWP to be necessary for public and/or worker safety. If approved by CSLC, signs may be posted indicating restricted construction areas.

LADWP is currently working collaboratively with a wide range of stakeholders to develop a Master Plan for Owens Lakebed. The Master Plan will identify goals and objectives to enhance the Owens Lakebed with a focus on dust mitigation, habitat and wildlife, water efficiency methods, and potential renewable energy development. Although the Master Plan is still in preparation, the consistency of the proposed project with the public access elements of the Master Plan will be described in the EIR for the Phase 7a project.

2.3.16 Transportation and Traffic

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

Discussion: Major roadways around Owens Dry Lake include U.S. 395, SR 136, and SR 190. Roads located on the lakebed relevant to the project include Sulfate Road, T-30 Road, and Main Line Road.

U.S. 395 – U.S. 395 is the main north-south transportation route through Inyo County and the Owens Valley. The majority of U.S. 395 adjacent to the lake is a four-lane divided highway.

SR 136 – SR 136 is a two-lane northwest/southeast highway connecting U.S. 395 to the north and SR 190 to the south. SR 136 has 12-foot-wide lanes with unimproved gravel shoulders in each direction in the vicinity of Owens Dry Lake. Travel to and from the gravel sources for the Phase 7a project will cross SR 136.

SR 190 – SR 190 is a two-lane southwest/northeast highway connecting U.S. 395 to the west and SR 136 to the east. SR 190 has 12-foot-wide lanes with unimproved gravel shoulders in each direction in the vicinity of Owens Dry Lake.

Additionally, as part of implementation of the DCMs, an internal network of roadways has been constructed on Owens Dry Lake. The Main Line Road roughly bisects existing dust control areas in the south and along the east side of the lake; the roadway crosses the Owens River in the north and is located north of T35-1, T35-2, and T37-1 Gravel Cover DCAs. From the LADWP Shale Pit, gravel trucks will cross SR 136 and connect to Sulfate Road. From the Dolomite mine, gravel trucks will cross SR 136 and connect to Road T-30.

a) and b) **Less Than Significant Impact.** Level of Service (LOS) is a qualitative measure describing operational conditions within traffic stream, or their perception by motorists and/or passengers which is calculated based on a number of design and operating criteria, such as lane width, roadside obstacles, trucks and busses, curvature, grades, etc. (Transportation Research Board, 2000). LOS A reflects free-flow conditions; at LOS E a road is operating at capacity and is congested. Typically, LOS C or LOS D represents acceptable flow conditions. The highway capacity as determined by the Highway Capacity Manual 2000 for a two-lane highway is 1,600 passenger cars per hour (pc/h) for each direction of travel; the capacity of a two lane-highway is 3,200 pc/h for both directions of travel combined. Based on 2008 traffic counts reported by Caltrans, U.S. 395, SR 136, and SR 190 all operate well below capacity at LOS A (Caltrans, 2009).

Construction of Phase 7a will increase traffic on these roadways for the transport of gravel, delivery of seed and plant material, delivery of pipelines and other infrastructure, and related to the movement of construction equipment and personnel during the approximately 18-month construction period. Construction equipment will be mobilized to the staging areas and then will remain on the lake; plant material and infrastructure deliveries will be limited. Therefore, the primary impact on local roadways will be for gravel transport to T37-1, T1A-3, T35-1, T35-2 and the 3 to 4 square miles of Transition Areas selected for BACM Hybrid (including portions of Gravel Cover): T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b.

Gravel haul routes for construction of Phase 7a will be contained within the on-lake roadway network to the maximum extent possible. During mobilization for the project, vehicles required for construction (dozers, flatbed trucks, water trucks) may be transported to the site via U.S. 395, SR 136, and/or SR 190. It is anticipated that vehicles will be transported to the site once, remain on-site for the construction period, and then be demobilized. Based on the limited number of vehicles to be mobilized and the existing excellent LOS on these roadways, project-related impacts on U.S. 395 and SR 190 will be temporary and less than significant.

However, project-related traffic will cross SR 136 throughout the construction period. In 2008, average annual daily traffic (AADT - total traffic volume for the year divided by 365 days) for SR 136 ranged between 600 vehicles at the junction of U.S. 395 and approximately 420 vehicles at the junction with SR 190 (Caltrans, 2009), well below the 1,600 pc/hr capacity for each direction of travel. The truck AADTs were 14 (at the junction with U.S. 395) and 11 (at the junction with SR 190) (Caltrans, 2009).

Gravel haul trips will be on-going for the 18-month construction period. Approximately 120 round trips will be required to haul gravel from the mines on the east side of the lake to the stockpile locations. At approximately 240 one-way trips per day and a 10 hour work day, approximately one truck would cross SR 136 every 2.5 minutes. Gravel trucks would not travel on SR 136 and add to the average daily traffic volumes, but would cross SR 136 approximately 240 times per day (either connecting to Sulfate Road or T-30 roadway). The peak hour traffic volume on SR 136 was 80 vehicles in 2008 (Caltrans, 2009). Since it operates well below capacity and at LOS A, the addition of approximately 24 trucks crossing SR 136 per hour would not substantially degrade the level of service on this roadway and project-related impacts on traffic would be less than significant.

c) **No Impact.** The project areas are not located sufficiently near either a private airstrip or public airport, nor does the project contain features that will alter air traffic patterns. The Lone Pine Airport is located approximately 3.6 miles north of the lake. No impacts on air safety will occur.

d) **Less Than Significant Impact with Mitigation Incorporated.** The Phase 7a project does not include construction or modification of off-lake roadways. New internal roadways will be created surrounding new DCAs. The expansion of the on-lake roadway system will not create new roadway hazards for the public.

However, construction of the project is estimated to require approximately 240 truck crossings of SR 136 per day. Since these crossings are not signalized and would be on-going for approximately 18 months, impacts related to traffic hazards are potentially significant. Additionally, degradation of the road surface on SR 136 at these crossing could result from traffic related to Phase 7a construction. With implementation of mitigation measures Trans-1 and Trans-2 (Traffic Work Safety Plan and repair of roadway damage at the SR 136 crossings), impacts will be reduced to a less than significant level.

e) **Less Than Significant Impact.** Owens Dry Lake is currently accessible to emergency vehicles via SR 136/Sulfate Road, SR 190/Dirty Socks access road, and U.S. 395/North and South Main Line access roads. Construction of the proposed project will increase the volume of trucks travelling on these roadways but will not alter the access points. The impact of the addition of approximately 24 truck trips per hour will be less than significant on emergency access.

f) **No Impact.** The project does not include housing, employment, or roadway improvements relevant to alternative transportation measures. Therefore, there will be no project-related impacts on alternative transportation.

Mitigation Measures to Reduce Impacts on Transportation and Traffic

Trans-1. LADWP shall develop and implement a Traffic Work Safety Plan to be approved by Caltrans for the construction phase of the Phase 7a project. The Plan will address the use of warning lights, signs, traffic cones, signals, flag persons and/or comparable measures as needed to maintain safe travel of haul trucks across SR 136 during construction.

Trans-2. LADWP shall repair damage to SR 136 in the areas near the mines where project-related truck traffic crosses SR 136. Prior to the start of construction activity, existing conditions at the crossings will be documented. After construction of Phase 7a is complete, physical damage documented at the SR 136 crossings will be repaired.

With implementation of the above mitigation measures, project-related impacts on transportation and traffic will be less than significant.

2.3.17 Utilities and Service Systems

Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statues and regulations related to solid waste?	☐	☐	☒	☐

Discussion:

a), b) and e) **Less Than Significant Impact.** Permanent habitable structures are not present on the project site and none are proposed as part of the project. The limited number of construction workers required to implement the project would not generate substantial population growth or create the need for new or expanded water or wastewater service. Approximately 200 construction workers are estimated to be necessary for Phase 7a construction. Wastewater generated at portable toilets or pumped from the septic system at the Sulfate Facility is treated by the Lone Pine Community Services District in compliance with the requirements of the Lahontan Regional Water Quality Control Board. In addition to the negligible potable water demand from construction workers, construction of the project will require water for dust control. The impact on water and wastewater is less than significant.

c) **Less Than Significant Impact.** The existing Phase 7a area does not have storm drain infrastructure or connect to any off-site storm drain facilities. The DCAs will be surrounded by raised roadways. Since stormflows will continue to drain in the direction of brine pool, as under existing conditions, impacts on storm water facilities will be less than significant.

d) **Less Than Significant Impact.** As of April 2011, LADWP has installed and is operating 39.5 square miles of DCMs on Owens Dry Lake playa which use approximately 95,000 afy of water from (or that would have been input to) the Los Angeles Aqueduct. In 2010, LADWP prepared a water supply assessment for the Phase 8 project (a separate project to install Gravel Cover in the northwest part of the lake). Through the water supply assessment for Phase 8, LADWP determined that there is insufficient surplus water supply available for LADWP to continue to implement Shallow Flooding as a DCM on Owens Dry Lake (LADWP, 2010c). Since this determination is relevant to any additional water commitment in excess of 95,000 afy, it is also applicable to Phase 7a. Therefore, Phase 7a was designed to be essentially water neutral – new areas of Shallow Flooding and Managed Vegetation would be offset by transition of existing areas of Shallow Flooding to the less water intensive Managed Vegetation/Shallow Flooding/Gravel BACM Hybrid. Therefore the anticipated water demands for Phase 7a of approximately 3,700 afy will be offset by water conservation in up to 4 square miles of Transition Areas. Therefore, the impact on water supply is less than significant.

f) and g) **Less Than Significant Impact.** Installation of Shallow Flooding, Managed Vegetation, and Gravel Cover in the Phase 7a project areas will not generate substantial volumes of solid waste. The limited volumes of solid waste generated by construction workers will be disposed at a permitted landfill in compliance with applicable regulations. As reported in the 2008 SIP SEIR, the Lone Pine Landfill serves the Owens Lake Planning Area and has a remaining site life of over 60 years (GBUAPCD, 2008b). Therefore, impacts related to solid waste disposal will be less than significant.

2.3.18 Mandatory Findings of Significance

	Issues and Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b)	Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	☐	☐	☒
c)	Does the project have impacts that are individually limited, but cumulatively considerable ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, effects of other current projects, and the effects of probable future projects.)?	☐	☐	☒	☐
d)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Discussion:

a) **Potentially Significant Impact.** The impact on sensitive biological resources from construction and operation of the Phase 7 project was assessed in the 2008 SIP EIR (GBUAPCD, 2008b). However, due to changes in the project description between Phase 7 and Phase 7a, and since baseline conditions have changed on the lake since that assessment was conducted, the impacts of the Phase 7a project on sensitive species and natural communities is potentially significant and will be described in the EIR for the Phase 7a project.

Cultural resources are known for the project areas included in Phase 7a. Construction of Phase 7a project facilities will include earthwork in areas that have not been previously disturbed for construction of DCMs. The project may also require reconfiguration of existing berms and installation of new infrastructure such as irrigation pipelines and drainlines. Disturbance to cultural resources potentially present in Phase 7a project areas from project construction is a potentially significant impact. The existing setting for cultural resources, results of record searches and pedestrian surveys, results of ongoing evaluations of known resources, and the significance of potential impacts to cultural resources will be described in the EIR for the Phase 7a project.

b) **No Impact**. This goal of the project is to be part of the long-term solution for dust control on Owens Dry Lake and to contribute to the attainment of the National Ambient Air Quality Standards (NAAQS) for PM_{10}. There are no short-term goals related to the project that will be disadvantageous to this long-term goal.

c) **Less Than Significant Impact.** Cumulatively with other DCMs on the lake, the project will be beneficial for air quality. However, cumulative impacts of the proposed project with other related projects will be described in the EIR for the Phase 7a project.

d) **Potentially Significant Impact.** This goal of the project is to be part of the long-term solution for dust control on Owens Dry Lake and to contribute to the attainment of the NAAQS for PM_{10} – a beneficial effect on human beings. Temporary impacts on air quality including emissions of GHGs will occur during project construction. Therefore, environmental effects of the proposed project related to air quality emissions will be described in the EIR for the Phase 7a project.

Section 3
References, Abbreviations and Report Preparation

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3.2 ACRONYMS AND ABBREVIATIONS

AADT	average annual daily traffic
Afy	acre-feet per year
APE	Area of Potential Effect
AQMP	Air Quality Management Plan
BACM	Best Available Control Measure
Bgs	below ground surface
BLM	(United States) Bureau of Land Management
BMPs	best management practices
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CARV	combination air-vacuum release valve
CCR	California Code of Regulations
CDF	California Department of Forestry
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CSLC	California State Lands Commission
CV	control valve
DCA	dust control area
DCM	dust control measure
DTSC	Department of Toxic Substances Control
DWR	(California) Department of Water Resources

EIR	Environmental Impact Report
EPA	(United States) Environmental Protection Agency
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FSEIR	Final Subsequent Environmental Impact Report
GBUAPCD	Great Basin Unified Air Pollution Control District
GHG	greenhouse gas
GLO	(United States) General Land Office
HCP	Habitat Conservation Plan
HDEP	high density polyethylene
Hp	Horsepower
IS	Initial Study
LADWP	(City of) Los Angeles Department of Water and Power
LGP	low ground pressure
LOS	Level of Service
LUST	leaking underground storage tank
mm	millimeters
MOA	Memorandum of Agreement
MSHA	Mine Safety and Health Administration
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
OLDMP	Owens Lake Dust Mitigation Program
OLHMP	Owens Lake Habitat Management Plan
OSHA	Occupational Safety and Health Administration
pc/h	passenger cars per hour
PIT	pressure indicating transmitters
PM	particulate matter
PM_{10}	particulate matter 10 microns or less in diameter
PRV	pressure reducing valves
SCR	supplemental control requirement

SFL	State and Federal Lands
SIP	State Implementation Plan
SLC	State Lands Commission
SMARA	Surface Mining and Reclamation Act
SNA	Significant Natural Areas
SPCC	Spill Prevention Control and Countermeasure
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VAC	volts alternating current
WDR	Waste Discharge Requirements

3.3 PREPARERS OF THE INITIAL STUDY

Los Angeles Department of Water & Power
Environmental Services
111 N. Hope Street, Room 1044
Los Angeles, CA 90012

Charles Holloway, Manager of Environmental Planning and Assessment
Laura Hunter, Project Manager

TECHNICAL ASSISTANCE PROVIDED BY

MWH Americas, Inc.
Sarah Garber, Project Manager
Dr. Janet Fahey, P.E., Technical Reviewer
Jackie Silber, GIS

Appendix B

Comments Received on the Notice of Preparation

Theodore D. Schade
Air Pollution Control Officer

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

157 Short Street, Bishop, California 93514-3537
Tel: 760-872-8211 E-mail: tschade@gbuapcd.org

June 9, 2011

Los Angeles Dept. of Water & Power
Attention: Ms. Laura Hunter
Environmental Affairs – Room 1050
111 North Hope Street
Los Angeles, California 90012

Subject: Owens Lake Phase 7a Dust Control Measures – May 2011 Initial Study Comments

Dear Ms. Hunter:

The Great Basin Unified Air Pollution Control District (District) appreciates the opportunity to comment on the Los Angeles Department of Water and Power's (LADWP's) May 2011 "Initial Study for Owens Dry Lake Phase 7a Dust Control Measures." Overall, the Initial Study (IS) for the Phase 7a dust control project is very complete and clearly written. It does a good job of presenting the 7a project to the public. The District's few comments are provided below.

1) The Stipulated Order for Abatement (SOA) approved by the LADWP Commission and the District Governing Board on March 17, 2011 specifically states: "up to 3.0 square miles of existing Shallow Flood controls as described in the attached Project Description may be transitioned to any combination of the approved BACM measures" (SOA, Page 16, line 6 ff.). The use of the decimal point and following zero makes it clear three square miles is the maximum size of the Transition Area. However, the IS states a number of times that, "3 to 4 square miles of existing shallow flooding dust control areas (DCAs) will be transitioned to a Hybrid dust control method." (IS page 1-2 and others) The LADWP can certainly transition more than 3.0 square miles of shallow flood dust controls to other approved dust controls. BACM transitions are clearly provided for in the 2008 SIP. However, any Phase 7a transition beyond 3.0 square miles is not subject to the special transition terms of the SOA and must meet the requirements in the 2008 SIP.

2) T35-1 and T35-2 are shown on Figure 2 and discussed in Section 1as being part of the Phase 7a Project. These areas were not included in the SOA and if they are converted

from the existing Shallow Flooding to a Hybrid control measure or to Gravel (both are mentioned in the IS), all conditions of the 2008 SIP must be met. These areas do not fall under the special transition provisions of the SOA.

3) The project description should clarify that the tillage proposed for area T12-1 is a temporary BACM test with a likely duration of three years and that by December 31, 2015 a permanent approved BACM must be in place and operational on T12-1, whether it is Tillage as an approved BACM or another BACM. The EIR should analyze implementing an existing approved BACM in case Tillage does not prove successful ("Plan B").

4) Section 1.4.1.1, page 1-6: The IS states for Shallow Flooding "at least 75 percent of the surface must be wet or have saturated soil." This is not correct. The Phase 7a areas have required PM_{10} control efficiencies that vary from 33 to 99 percent. This makes the wetness requirement for areas on which Shallow Flooding is implemented vary from between 14 to 73 percent. Exhibits 2 and 3 of the 2008 SIP Order contain the map of required control efficiencies and a graph showing the corresponding minimum required wetness.

5) Section 1.4.1.1, page 1-8: From the brief discussion of the new water supply pipelines leading to T37-1 and T37-2, it appears the pipeline will be placed within the berm/road. Although the IS mentions the use of culverts to prevent stormwater impoundment, the design of these berms/roads needs to be carefully considered and analyzed such that it does not block the natural flow of shallow groundwater and surface water. Such blockage of natural drainage and subsurface flows occurred with the design of the Mainline Road (Brady Highway) and may have caused or contributed to the development of new dust sources in downstream areas robbed of their natural overland and subsurface flow. These new dust source areas now require expensive dust control measures. The District advises very careful consideration of these existing natural flow paths.

6) Section 1.4.5, page 1-21: The following best management practice should be added to the bulleted list: • Phasing Transition Areas construction to minimize the amount of dust control areas that are not operational at any one time.

7) Section 1.4.7, page 1-22: The overall 7a construction sequence should include the possibility of implementing an approved BACM other than tilling in the tillage test area.

8) Table 3, page 1-24: The final project milestone should be "T12-1 Compliance, December 2015."

9) Section 2.3.3, page 2-9: Although it is already required, the EIR should specifically commit to ensuring all mobile and stationary fuel-powered equipment used on the lake bed meets the latest California emission requirements.

10) Terminology

a) The proper name for the lake is "Owens Lake," not "Owens Dry Lake." (The largest lake in Inyo County is still Owens Lake, even though large parts of it are dry.)

b) The term for the exposed bed of Owens Lake is: "Owens Lake bed" ("lake bed" is two words, not one). Note the name for the Master Plan has been changed to reflect this traditional convention.

The District trusts these comments will help make the Draft EIR more comprehensive. Please contact Dr. Grace Holder or me if you have any questions or need additional information.

Sincerely,

Theodore D. Schade, P.E.
Air Pollution Control Officer

Cc (via e-mail): Mr. William T. Van Wagoner, LADWP
Mark Sedlacek, LADWP

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State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Inland Deserts Region (IDR)
407 West Line Street
Bishop, CA 93514
(760) 872-1171
(760) 872-1284 FAX

EDMUND G. BROWN JR, Governor
JOHN McCAMMAN, Director

June 23, 2011

Ms. Laura Hunter
City of Los Angeles Department of Water and Power
111 North Hope Street
Los Angeles, CA 90012

Owens Dry Lake Phase 7a Dust Control Measures
(State Clearinghouse Number: 2011051068)

Dear Ms. Hunter:

The Department of Fish and Game, hereinafter referred to as Department has reviewed the Notice of Preparation (NOP) of the Draft Environmental Impact Report (DEIR) for Owens Dry Lake Phase 7a Dust Control Measures (State Clearinghouse Number: 2011051068), hereinafter referred to as the "Project". The Department appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources.

The Department is a Trustee Agency pursuant to the California Environmental Quality Act (CEQA). A Trustee Agency has jurisdiction over certain resources held in trust for the people of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (CEQA Guidelines, Section 15386). As the trustee agency for fish and wildlife resources, the Department provides requisite biological expertise to review and comment upon CEQA documents, and makes recommendations regarding those resources held in trust for the people of California.

The Department may also assume the role of Responsible Agency. A Responsible Agency is an agency other than the lead agency that has a legal responsibility for carrying out or approving a project. A Responsible Agency actively participates in the Lead Agency's CEQA process, reviews the Lead Agency's CEQA document and uses that document when making a decision on the project. The Responsible Agency must rely on the Lead Agency's environmental document to prepare and issue its own findings regarding the project (CEQA Guidelines, Sections 15096 and 15381). The Department most often becomes a responsible agency when a 1600 Streambed Alteration Agreement or a 2081(b) California Endangered Species Act Incidental Take Permit is needed for a project. The Department relies on the environmental document prepared by the Lead Agency to make a finding and decide whether or not to issue the permit or agreement. It is important that the Lead Agency's EIR considers the Department's responsible agency requirements. For example, CEQA requires the Department to include additional feasible alternatives or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment (CEQA Guidelines, section 15096 (g) (2). In rare cases, the Department as Responsible Agency may be required to assume the role of the Lead Agency under certain conditions (CEQA Guidelines, section 15052).

Pursuant to California Fish and Game Code section 711.4, the Department collects a filing fee for all projects subject to CEQA. These filing fees are collected to defray the costs of managing and protecting fish and wildlife resources including, but not limited to, consulting with public agencies, reviewing environmental documents, recommending mitigation measures, and developing monitoring programs. Project applicants need not pay a filing fee in cases where a project will have no effect on fish and wildlife, as determined by the Department, or where their project is statutorily or categorically exempt from CEQA.

The proposed project is to control PM_{10} dust emissions on the previously identified 3.1 square miles of Phase 7 Moat and Row (M&R) areas (T1A-3, T1A-4, T12-1, T32-1, and T37-2) that have been identified by the Great Basin unified Air Pollution Control District (GBUAPCD) as emissive. Since implementation of the M&R Dust Control Measure (DCM) is no longer planned, the Los Angeles Department of Water and Power (LADWP) has defined a new project, Phase 7a, to control dust emissions in these identified areas using Best Available Control Measures (BACM), which includes gravel cover, shallow flooding and managed vegetation. Implementation of tillage is also proposed as a BACM test in cell T12-1. To balance water demand related to implementation of these BACM on 3.1 square miles, LADWP proposes to transition 3 to 4 square miles (6 square miles will be evaluated) of existing shallow flooding dust control areas to a Hybrid dust control method, which would include a combination of all three BACM and allow for more efficient water use at Owens Lake.

To enable Department staff to adequately review and comment on the proposed project, we recommend the following information be included in the DEIR, as applicable:

1. A complete assessment of the flora and fauna within and adjacent to the project area should be conducted, with particular emphasis upon identifying special status species including rare, threatened, and endangered species. This assessment should also address locally unique species, rare natural communities, and wetlands. The assessment area should be large enough to encompass areas potentially subject to both direct and indirect project affects.

    a. The DEIR should include survey methods, dates, and results; and should list all plant and animal species detected within the project study area. Special emphasis should be directed toward describing the status of rare, threatened, and endangered species in all areas potentially affected by the project. All necessary biological surveys should be conducted in advance of DEIR circulation, and should not be deferred until after project approval.

b. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380).

c. Species of Special Concern (SSC) status applies to animals generally not listed under the federal Endangered Species Act or the California Endangered Species Act, but which nonetheless are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. SSCs should be considered during the environmental review process.

d. A detailed vegetation map should be prepared, preferably overlaid on an aerial photograph. The map should be of sufficient resolution to depict the locations of the project site's major vegetation communities, and view project impacts relative to each community type. The vegetation classification system used to name the polygons should be described.

e. A complete assessment of rare, threatened, and endangered invertebrate, fish, wildlife, reptile, and amphibian species should be presented in the DEIR. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

f. The Department's California Natural Diversity Data Base (CNDDB) should be searched to obtain current information on previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. In order to provide an adequate assessment of special-status species potentially occurring within the project vicinity, the search area for CNDDB occurrences should include all U.S.G.S 7.5-minute topographic quadrangles with project activities, and all adjoining 7.5-minute topographic quadrangles. The EIR should discuss how and when the CNDDB search was conducted, including the names of each quadrangle queried.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts, should be included.

   a. The EIR should present clear thresholds of significance to be used by the Lead Agency in its determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect.

   b. CEQA Guidelines, § 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

   c. Impacts associated with initial project implementation as well as long-term operation and maintenance of a project should be addressed in the EIR.

   d. In evaluating the significance of the environmental effect of a project, the Lead Agency should consider direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes in the environment which may be caused by the project. Expected impacts should be quantified (e.g., acres, linear feet, number of individuals taken, volume or rate of water extracted, etc. to the extent feasible).

   e. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this may include public lands, open space, downstream aquatic habitats, areas of groundwater depletion, or any other natural habitat that could be affected by the project.

   f. Impacts to and maintenance of wildlife corridor/movement areas and other key seasonal use areas should be fully evaluated and provided.

   g. A discussion of impacts associated with increased lighting, noise, human activity, changes in drainage patterns, changes in water volume, velocity, quantity, and quality, soil erosion, and/or sedimentation in streams and water courses on or near the project site, with mitigation measures proposed to alleviate such impacts should be included. Special considerations applicable to linear projects include ground disturbance that may facilitate infestations by exotic and invasive species over a great distance.

h. A cumulative effects analysis should be developed as described under CEQA Guidelines, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts to similar plant communities and wildlife habitats.

3. A range of project alternatives should be analyzed to ensure that the full spectrum of alternatives to the proposed project are fully considered and evaluated. Alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be identified.

   a. If the project will result in any impacts described under the Mandatory Findings of Significance (CEQA Guidelines, § 15065) the impacts must be analyzed in depth in the EIR, and the Lead Agency is required to make detailed findings on the feasibility of alternatives or mitigation measures to substantially lessen or avoid the significant effects on the environment. When mitigation measures or project changes are found to be feasible, the project should be changed to substantially lessen or avoid the significant effects.

4. Mitigation measures for adverse project-related impacts to sensitive plants, animals, and habitats should be thoroughly discussed. Mitigation measures should first emphasize avoidance and reduction of project impacts. For unavoidable impacts, the feasibility of on-site habitat restoration or enhancement should be discussed. If on-site mitigation is not feasible, off-site mitigation through habitat creation, enhancement, acquisition and preservation in perpetuity should be addressed.

   a. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful.

   b. Areas reserved as mitigation for project impacts should be legally protected from future direct and indirect impacts. Potential issues to be considered include limitation of access, conservation easements, monitoring and management programs, water pollution, and fire.

c. Plans for restoration and revegetation should be prepared by persons with expertise in southern California ecosystems and native plant revegetation techniques. Each plan should include, at a minimum: (a) the location of the mitigation site; (b) the plant species to be used, container sizes, and/or seeding rates; (c) a schematic depicting the mitigation area; (d) planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for long-term conservation of the mitigation site.

5. Take of species of plants or animals listed as endangered or threatened under the California Endangered Species Act (CESA) is unlawful unless authorized by the Department. However, a CESA 2081(b) Incidental Take Permit may authorize incidental take during project construction or over the life of the project. The DEIR must state whether the project would result in any amount of incidental take[1] of any CESA-listed species. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to a project and mitigation measures may be required in order to obtain a CESA Permit.

The Department's issuance of a CESA Permit for a project that is subject to CEQA will require CEQA compliance actions by the Department as a Responsible Agency. The Department as a responsible agency under CEQA will consider the Lead Agency's Negative Declaration or Environmental Impact Report for the project. The Department may require additional mitigation measures for the issuance of a CESA Permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA Permit.

To expedite the CESA permitting process, the Department recommends that the DEIR addresses the following CESA Permit requirements:

a. The impacts of the authorized take are minimized and fully mitigated;
b. The measures required to minimize and fully mitigate the impacts of the authorized take and: (1) are roughly proportional in extent to the impact of the taking on the species; (2) maintain the applicant's

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[1] Even a single individual.

objectives to the greatest extent possible, and (3) are capable of successful implementation;

c. Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with and the effectiveness of the measures; and

d. Issuance of the permit will not jeopardize the continued existence of a State-listed species.

6. The Department has responsibility for wetland and riparian habitats. It is the policy of the Department to strongly discourage development in wetlands or conversion of wetlands to uplands. We oppose any development or conversion which would result in a reduction of wetland acreage or wetland habitat values, unless, at a minimum, project mitigation assures there will be "no net loss" of either wetland habitat values or acreage. The EIR should demonstrate that the project will not result in a net loss of wetland habitat values or acreage.

   a. If the project site has the potential to support aquatic, riparian, or wetland habitat, a delineation of lakes, streams, and associated riparian habitats potentially affected by the project should be provided for agency and public review. This report should include identification of wetlands pursuant to the U. S. Fish and Wildlife Service wetland definition[2] as adopted by the Department[3]. Please note that some wetland and riparian habitats subject to the Department's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers. The delineation should also include mapping of ephemeral, intermittent, and perennial stream courses potentially impacted by the project. In addition to federally protected wetlands, the Department considers impacts to wetlands (as defined by the Department) potentially significant.

   b. The project may require a Lake or Streambed Alteration Agreement, pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant prior to the applicant's commencement of any activity that will substantially divert or obstruct the natural flow or substantially change

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[2] Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

[3] California Fish and Game Commission Policies: Wetlands Resources Policy; Wetland Definition, Mitigation Strategies, and Habitat Value Assessment Strategy; Amended 1994

the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or use material from a streambed. The Department's issuance of a Lake or Streambed Alteration Agreement for a project that is subject to CEQA will require CEQA compliance actions by the Department as a responsible agency. The Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) Negative Declaration or Environmental Impact Report for the project. To minimize additional requirements by the Department pursuant to Section 1600 et seq. and/or under CEQA, the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the agreement.

The Department has identified the following environmental issues that need to be explored in the draft EIR:

The NOP identifies that the project may utilize the LADWP shale pit as a gravel source, which is currently permitted for 40 acres of development and has the potential for expansion. It also discusses that if a gravel conveyor was constructed in the future, it could be used to convey gravel across State Route 136 to the LADWP sulfate facility for transport. According to the Initial Study and Mitigated Negative Declaration for Owens Dry Lake Phase 8 Dust Control Measures (SCH # 2010071044), a search on the CNNDB revealed that the proposed location for the conveyor to carry material from the LADWP shale pit is within the range of the state Threatened Mohave ground squirrel (MGS). A complete analysis of potential direct and indirect impacts on this species should be conducted. The Department recommends LADWP conduct MGS trapping surveys in coordination with the Department per the attached 2003 Mohave ground squirrel survey guidelines and provide both survey results as well as a discussion of vegetation associations in the DEIR. If additional information indicates that incidental take of MGS will or is likely to occur with implementation of the project, then an Incidental Take Permit would authorize LADWP to lawfully carry out the project.

The Department recommends that LADWP assess existing habitat values that may be impacted from Phase 7a project construction and propose mitigation to compensate for these impacts. We would be happy to participate in the review and discussion of proposed mitigation as well as the development of transition model designs.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Ms. Tammy Branston, Environmental Scientist, at (760) 872-0751 or by electronic mail at tbranston@dfg.ca.gov.

Sincerely,

Brad Henderson
Environmental Program Manager

Attachment

cc: Department of Fish and Game
CHRON
Bishop

State Clearinghouse
Sacramento

CALIFORNIA DEPARTMENT OF FISH AND GAME

MOHAVE GROUND SQUIRREL SURVEY GUIDELINES
(January 2003)

Unless a certain circumstance[(1)] applies, the Department of Fish and Game (Department) requires a survey to be undertaken for the Mohave ground squirrel (*Spermophilus mohavensis*) on a project site, if the proposed site has potential habitat of this species and the presence of the species on the project site is unknown. Potential habitat is land supporting desert shrub vegetation[(2)] within or adjacent to the geographic range[(3)] of the species. A project is an action that results in temporary or permanent removal or degradation of potential habitat. The Department considers a project site to be an area of land controlled by the project proponent, including but not limited to the portion proposed for removal or degradation of potential habitat. The Department considers a project site to be occupied by the Mohave ground squirrel, if an individual of this species is observed, or is captured on any sampling grid, on the project site.

The Department intends for these survey guidelines to apply to projects that would negatively affect ≤180 acres or to linear projects ≤ 5 miles in length. For projects of larger scale, the Department requires special survey protocol(s) to be developed through its consultation with either the project proponent or the local lead agency (if appropriate) or both entities.

For projects of the appropriate scale, each survey shall adhere to the following conditions:

1. Studies that include trapping for the Mohave ground squirrel shall be authorized by a Memorandum of Understanding (MOU) with the Habitat Conservation Planning Branch of the Department, or by other permit as determined by the Department, and shall be undertaken only by a qualified biologist. A qualified biologist is a biologist who has demonstrated pertinent field experience in capturing and handling ground squirrels or other small mammals in desert/arid communities and who has been permitted by the Department to work without supervision. Each biologist setting traps, opening traps containing captured animals, or handling captured animals must be named in the MOU as an authorized person, whether qualified or not to work without supervision. (For information on the procedure to obtain an MOU, see page 3.)

2. Visual surveys to determine Mohave ground squirrel activity and habitat quality shall be undertaken the period of 15 March through 15 April. All potential habitat on a project site shall be visually surveyed during daylight hours by a biologist who can readily

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(1) A survey is not necessary in the circumstance that the project proponent prefers to assume that the Mohave ground squirrel is present on the project site and applies for a California Endangered Species Act incidental-take permit (Fish and Game Code Section 2081b) requiring mitigation and compensation.

(2) Examples of desert shrub vegetation that is known to provide habitat for the Mohave ground squirrel include (but are not limited to) Mojave Creosote Bush Scrub, Mojave Mixed Woody Scrub, and Desert Saltbush Scrub as described in Holland 1986.

(3) Since the limits of the geographic range are not known precisely, surveys may be required in areas up to five miles from currently-documented boundaries.

identify the Mohave ground squirrel and the white-tailed antelope squirrel (*Ammospermophilus leucurus*).

3. If visual surveys do not reveal presence of the Mohave ground squirrel on the project site, standard small-mammal trapping grids shall be established in potential Mohave ground squirrel habitat. The number of grids will depend on the amount of potential habitat on the project site, as determined by the guidelines presented in paragraphs 4 and 5 of these guidelines.

4. For linear projects (for example, highways, pipelines, or electric transmission lines), each sampling grid shall consist of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) arranged in a rectangular pattern, 4 traps wide by 25 traps long, with traps spaced 35 meters apart along each of the four trap lines. At a minimum, one sampling grid of this type shall be established in each linear mile, or fraction thereof, of potential Mohave ground squirrel habitat along the project corridor.

5. For all other types of projects, one sampling grid consisting of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) shall be established for each 80 acres, or fraction thereof, of potential Mohave ground squirrel habitat on the project site. The traps shall be arranged in a 10 x 10 grid, with 35-meter spacing between traps.

6. Each sampling grid shall be trapped for a minimum five consecutive days, unless a Mohave ground squirrel is captured before the end of the five-day term on the grid or on another grid on the project site. If no Mohave ground squirrel is captured on a sampling grid on the project site in the first five-consecutive-day term, each sampling grid shall be sampled for a SECOND five-consecutive-day term. Trapping may be stopped before the end of the second term if a Mohave ground squirrel is captured on any sampling grid on the project site. If no Mohave ground squirrel is captured during the second five-consecutive-day term, each sampling grid shall be sampled for a THIRD five-consecutive -day term. The FIRST trapping term shall begin and be completed in the period of 15 March through 30 April. If a SECOND term is required, it shall begin at least two weeks after the end of the first term, but shall begin no earlier than 01 May, and shall be completed by 31 May. If a THIRD term is required, it shall begin at least two weeks after the end of the second term, but shall begin no earlier than 15 June, and shall be completed by 15 July. All trapping shall be conducted during appropriate weather conditions, avoiding periods of high wind, precipitation, and low temperatures (<50°F or 10°C).

7. For projects requiring two or more sampling grids, capture of a Mohave ground squirrel on any grid will establish presence of the species on the project site. Trapping may be

stopped on all grids on the project site at that time. For linear projects, very large project sites, project sites characterized by fragmented or highly-heterogeneous habitats, or in other special circumstances, continued trapping may be necessary.

8. A maximum 100 traps shall be operated by each qualified biologist. Each trap shall be covered with a cardboard A-frame or equivalent non-metal shelter to provide shade. Trap and shelter orientation shall be on a north-south axis. All traps shall be opened within one hour of sunrise and may be closed beginning one hour before sunset. Traps shall be checked at least once every four hours to minimize heat stress to captured animals. When traps are open, temperature shall be measured at a location within the sampling grid, in the shade, and one foot (approx. 0.3 meters) above the ground at least once every hour. Traps shall be closed when the ambient air temperature at one foot above the ground in the shade exceeds 90°F (32°C). Trapping shall resume on the same day after the ambient temperature at one foot (approx. 0.3 meters) above the ground in the shade falls to 90°F (32°C) and shall continue until one hour before sunset. Suggested baits are mixed grains, rolled oats, or bird seed, with a small amount of peanut butter.

9. A qualified biologist shall complete the Survey and Trapping Form, which is found on page 5 of these guidelines. This biologist, or the lead agency for the project, shall submit the completed form to the appropriate Department office (see page 4) with the biological report on the project site.

10. The Department may allow variation on these guidelines, with the advance written approval of the appropriate regional habitat conservation planning office (see page 4). Such variations could include biologically-appropriate modification of the trapping dates or changes in grid configuration that would enhance the probability of detecting Mohave ground squirrels. Any variation which concerns trapping or marking methods must be incorporated into the MOU or permit that authorizes the work.

11. If a survey conducted according to these guidelines results in no capture or observation of the Mohave ground squirrel on a project site, this is not necessarily evidence that the Mohave ground squirrel does not exist on the site or that the site is not actual or potential habitat of the species. However, in the circumstance of such a negative result, the Department will stipulate that the project site harbors no Mohave ground squirrels. This stipulation will expire one year from the ending date of the last trapping on the project site conducted according to these guidelines.

<u>literature cited in footnote (1)</u>

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Dep of Fish and Game (Sacramento), Nongame Heritage Program report, 156 pages.

CONTACTS

A. For information on obtaining an MOU or on the type of experience that a qualified biologist must have, contact the following:

John Gustafson
Habitat Conservation Planning Branch
Department of Fish and Game
1416 Ninth Street, Suite 1260
Sacramento, California 95814

tele: (916) 654-4260
fax: (916) 653-2588
e-mail: JGustafs@dfg.ca.gov

B. For information on project review and conservation planning by the Department, as these activities regard the Mohave ground squirrel, contact the following:

(for Kern County)
Habitat Conservation Planning
San Joaquin Valley and Southern Sierra Region
Department of Fish and Game
1234 E. Shaw Avenue
Fresno, California 93710
tele: (559) 243-4014

(for Los Angeles County)
Habitat Conservation Planning
South Coast Region
Department of Fish and Game
4949 View Ridge Avenue
San Diego, California 92123
tele: (805) 491-3571

(for Inyo and San Bernardino counties)
Habitat Conservation Planning
Eastern Sierra and Inland Deserts Region
Department of Fish and Game
407 West Line Street
Bishop, California 93514
tele: (760) 872-1171

Mohave Ground Squirrel (MGS) Survey and Trapping Form (photocopy as needed)

PART I - PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: ______________________ Property owner: ______________________

Location: Township _________; Range _________; Section _________; ¼ Section ________

Quad map/series: ______________________ UTM coordinates: ______________________
GPS coordinates of trapping-grid corners

Acreage of Project Site: ______________ Acreage of potential MGS habitat on site: __________

Total acreage visually surveyed on project site: ____________ Date(s): ____________________
visual surveys

Visual surveys conducted by: ____
names of all persons by date (use back of form, if needed)

Total acres trapped: _______________ Number of sampling grids: __________________

Trapping conducted by: ____
names of all persons by sampling term and sampling grid (use back of form, if needed)

Dates of sampling term(s): FIRST__________ SECOND __________ THIRD ____________
if required if required

PART II - GENERAL HABITAT DESCRIPTION (use back of form, if needed)
Vegetation: dominant perennials: ____
other perennials: ____
dominant annuals: ____
____
other annuals: ____
____

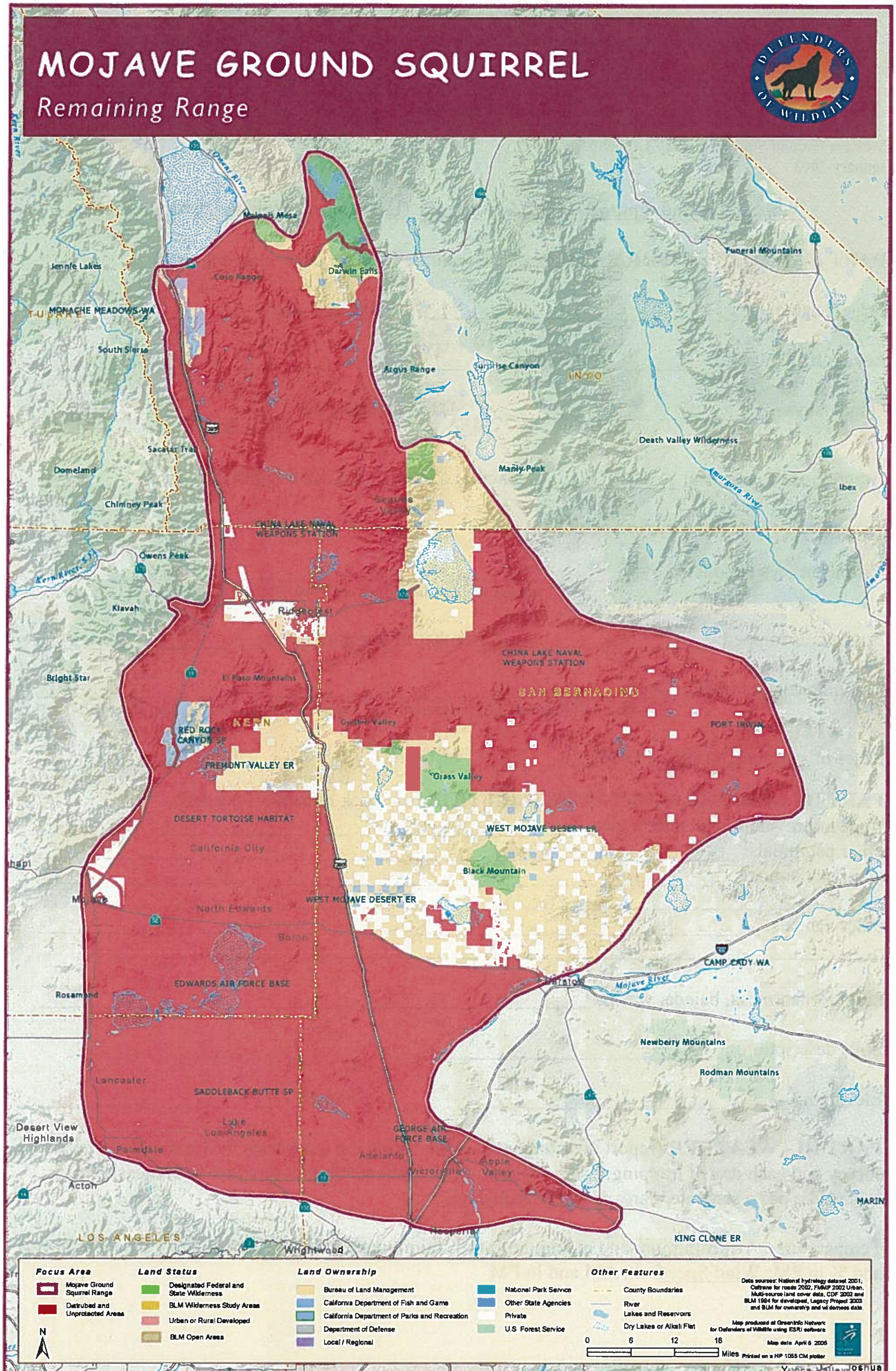
Land forms (mesa, bajada, wash): ____

Soils description: ____

Elevation: __________________________ Slope: _____________________

PART III - WEATHER (report measurements in the following categories for each day of visual survey and each day of trapping; using 24-hour clock, indicate time of day that each measurement was made; use a separate blank sheet for each day)

Temperature: AIR minimum and maximum; SOIL minimum and maximum; Cloud Cover: % in AM and % in PM; Wind Speed: in AM and in PM



MOJAVE GROUND SQUIRREL
Remaining Range
Malpais Mesa
Coso Range
Darwin Falls
Jennie Lakes
MONACHE MEADOWS WA
South Sierra
Argus Range
Sunrise Canyon
INYO
Funeral Mountains
Death Valley Wilderness
Manly Peak
Amargosa River
Ibex
Sacatar Trail
Domeland
Chimney Peak
CHINA LAKE NAVAL WEAPONS STATION
Owens Peak
Kiavah
Ridgecrest
Bright Star
El Paso Mountains
CHINA LAKE NAVAL WEAPONS STATION
SAN BERNARDINO
KERN
RED ROCK CANYON SP
FREMONT VALLEY ER
Golden Valley
FORT IRWIN
Grass Valley
DESERT TORTOISE HABITAT
California City
WEST MOJAVE DESERT ER
Black Mountain
Mojave
North Edwards
WEST MOJAVE DESERT ER
Boron
EDWARDS AIR FORCE BASE
Rosamond
CAMP CADY WA
Barstow
Mojave River
Newberry Mountains
Rodman Mountains
Lancaster
SADDLEBACK BUTTE SP
Desert View Highlands
Lake Los Angeles
GEORGE AIR FORCE BASE
Palmdale
Adelanto
Apple Valley
Victorville
Acton
Hesperia
MARIN
LOS ANGELES
Wrightwood
KING CLONE ER
Focus Area
Mojave Ground Squirrel Range
Distrubed and Unprotected Areas
Land Status
Designated Federal and State Wilderness
BLM Wilderness Study Areas
Urban or Rural Developed
BLM Open Areas
Land Ownership
Bureau of Land Management
California Department of Fish and Game
California Department of Parks and Recreation
Department of Defense
Local / Regional
National Park Service
Other State Agencies
Private
U.S. Forest Service
Other Features
County Boundaries
River
Lakes and Reservoirs
Dry Lakes or Alkali Flat
N
0 6 12 18 Miles
Data sources: National hydrology dataset 2001, Caltrans for roads 2002, FMMP 2002 Urban, Multi-source land cover data, CDF 2002 and BLM 1994 for developed, Legacy Project 2003 and BLM for ownership and wilderness data
Map produced at GreenInfo Network for Defenders of Wildlife using ESRI software
Map date April 5 2005
Printed on a HP 1055 CM plotter
Yucca Valley
Joshua

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

CURTIS L. FOSSUM, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

***Contact Phone:* (916) 574-1890**
***Contact FAX:* (916) 574-1885**

June 24, 2011

File Ref: SCH # 2011051068

Ms. Laura Hunter
City of Los Angeles Department of Water and Power
111 North Hope Street
Los Angeles, CA 90012

Subject: Notice of Preparation/Initial Study (NOP/IS) for an Environmental Impact Report (EIR) for the Owens Dry Lake Phase 7a Dust Control Measures Project, Inyo County

Dear Ms. Hunter:

The California State Lands Commission (CSLC) staff has reviewed the subject NOP/IS for an EIR for the Owens Dry Lake Phase 7a Dust Control Measures Project (Project), which is being prepared by the Los Angeles Department of Water and Power (LADWP), as the lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] § 21000 et seq.). CSLC staff has prepared these comments as a trustee agency because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. Additionally, because the Project involves work on sovereign lands and would require a CSLC lease amendment, the CSLC will act as a responsible agency. LADWP has submitted an application for a lease amendment; however, that application is not yet complete. CSLC staff looks forward to working with LADWP staff to complete the application process and to participating in the environmental review for the Project.

<u>CSLC Jurisdiction and Public Trust Lands</u>

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable rivers, sloughs, lakes, etc. The CSLC has certain residual and review authority for tide and submerged lands legislatively granted in trust to local jurisdictions (PRC § 6301, § 6306). All tide and submerged lands, granted or ungranted, as well as navigable rivers, sloughs, lakes, etc., are impressed with the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for fill or artificial accretion. On navigable non-tidal waterways, the State holds fee ownership of the bed landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark. Such boundaries may not be readily apparent from present day site inspections.

CSLC staff offers the following comments and will continue to participate in the development of the EIR.

Project Description

As described in the NOP/IS and LADWP's lease application, LADWP proposes to add new Dust Control Areas (DCAs) to its existing area of management on the Owens Lakebed and implement more water-efficient Best Available Control Measures (BACMs) for dust control on existing DCAs. In this way, LADWP would further control dust emissions and reduce water usage on the Lakebed.

LADWP proposes to carry out Phase 7a of the Owens Lake Dust Mitigation Program (OLDMP) to meet the agency's objectives and needs as follows:

- Comply with the Great Basin Unified Air Pollution Control District's (GBUAPCD) 2008 State Implementation Plan (SIP) and, more specifically, Order of Abatement #110317-01 by applying BACMs to 3.1 square miles of unimproved playa on the Lakebed; and
- Convert 3 to 4 square miles of existing Shallow Flooding DCAs to a mixture of Gravel Cover, Shallow Flooding, and Managed Vegetation and use the water saved on the new DCAs.

CSLC staff understands that the Project would include the following components:

- Shallow Flooding in T1A-4 and a portion T37-2, Managed Vegetation in T32-1 and portions of T37-1 and T37-2, and Gravel Cover in T1A-3 and a portion of T37-1;
- A Tillage BACM test in T12-1;
- Conversion of 3 to 4 square miles of Transition Areas, selected from existing Shallow Flooding areas T1A-2_a, T10-2_a, T2-1, T5-1, T5-3, T5-3 Addition_a, T5-3 Addition_b, T26, T28N, T28S, T30-1_a, T30-1_b, and T36-1_b, to the 3-BACM hybrid; and
- Conversion of existing Shallow Flooding areas T35-1 and T35-2 to Gravel Cover.

Most, if not all of the new DCAs and existing Transition Areas are on CSLC-managed, State sovereign lands.

Environmental Review

CSLC staff requests that the following potential impacts be analyzed in the EIR.

Project Description

1. In its description of Gravel Cover Construction (section 1.4.3.2), the NOP/IS notes that "although a conveyor is not currently installed at the borrow pit, if one was constructed in the future it could be used to convey gravel across SR 136 to the LADWP Sulfate Facility and then trucks would be used to transport gravel to the stockpile locations." Some details of such a conveyor and its construction were initially included in the Mitigated Negative Declaration (MND) that LADWP prepared for the Owens Dry Lake Dust Phase 8 Dust Control Measures project (Phase 8). It is not clear from the NOP/IS whether construction of a conveyor or conveyors would be part of the subject Project, or be considered as a separate project. Consideration of the construction of conveyors should be described more thoroughly in the EIR as part of the Project or in the EIR's analysis of cumulative impacts.

Aesthetics

2. Gravel: Although the NOP/IS for the Project identifies aesthetic impacts as "less than significant," this is not certain. The EIR should include a detailed analysis of the potential aesthetic impact of the additional proposed gravel cover which, if approved, would result in 4.75 square miles (sm) of gravel cover on the Lakebed (includes previously approved areas). CSLC staff has raised concerns in the past about the appearance and relative permanence of large areas of gravel on the Lakebed, and believes that the aesthetics analysis in the EIR should not assume that the visual impact of large areas of gravel is equivalent to that of existing unvegetated playa. CSLC staff remains concerned about the increasing use of gravel. Based on information in the NOP/IS on p. 1-13 and p. 1-19, the amount of gravel cover for Phase 7a could be an additional 2.58 sm (includes T37-1, .21 sm; T1A-3, .79 sm; T35-1, .11 sm; T35-2, .15 sm) plus up to one-third of the 4 sm of Transition Areas or 1.32 sm).

   Furthermore, CSLC staff understands that the GBUAPCD has directed LADWP to implement air pollution control measures on additional areas totaling approximately 2.93 sm (Phase 9) and to prepare a scope of work for air pollution control measures on another 2 sm of "Watch Areas" (Owens Lake Dust Control Preliminary 2011 Supplemental Control Requirements Determination, dated April 7, 2011). Although dust control measures (DCMs) have not yet been proposed for these areas, LADWP has indicated it plans to continue reducing its use of water on the Lakebed and gravel cover could be a potential DCM for these additional areas.

Biological Resources

3. Sensitive Species: LADWP has already identified in the NOP/IS that, per the California Natural Diversity Database, special status plant and bird species occur in the Project area. In developing the EIR's analysis of impacts to Biological Resources, LADWP should consult with the California Department of Fish and Game (DFG) and the U.S. Fish and Wildlife Service (FWS) to determine the Project's potential effects on these species and any additional species the agencies may identify and, if necessary, design feasible mitigation. Staff recommends early consultation with these agencies to minimize the impacts of the Project on sensitive species.

4. Because reuse of water on the Lakebed may lead to contaminant loading in the water used to create or enhance habitat, the EIR should discuss the potential for the collection and recirculation of tailwater and drainwater in shallow flood areas to concentrate contaminants or toxic chemicals, with related potential impacts to wildlife (p. 1-8, 1st paragraph).

5. Construction Noise and Traffic: The NOP/IS also notes that the EIR will examine the impacts that construction noise and truck traffic (including gravel hauling) in particular will have on wildlife, particularly snowy plover and migratory birds. If impacts are found to be significant, mitigation measures could include species-specific work windows as defined by DFG and FWS. Again, early consultation with these agencies can aid not only in developing mitigation measures, but also in designing the Project to minimize the need for separate mitigation.

6. The EIR should determine if any of the Transition Areas under consideration were mitigation for previous dust control projects. CSLC staff acknowledges that the Master Planning effort currently underway is evaluating habitat areas on the Lakebed. Implementation of Phase 7a DCMs should be consistent with the Owens Lake Master Plan (OLMP).

Cultural Resources

7. CSLC and LADWP staffs have discussed the ongoing cultural resources evaluations for the Project and the need to obtain a permit from the CSLC for ground-disturbing archaeological testing and evaluation activities. CSLC staff looks forward to receiving an application for the requested archaeological investigations related to the Project.

Climate Change

8. Greenhouse Gases (GHGS): A GHG emissions analysis consistent with the California Global Warming Solutions Act (AB 32) and required by section

15064.4 of the State CEQA Guidelines[1] should be included in the EIR. This analysis should not only quantify the GHGs that will be emitted as a result of the Project's construction activities, as the NOP/IS mentions, but also identify a threshold for significance for GHG emissions, determine the significance of the impacts of those emissions, and, if impacts are significant, identify mitigation measures that would reduce or minimize those impacts. Because GHG emissions will also result from future maintenance of the DCAs (e.g., re-tillage, trucking in replacement gravel), this quantification should also include a discussion on emissions expected from maintenance. These estimates should be informed by the expected frequency of maintenance activity and the expected overall life of the Project. The analysis in the EIR should also evaluate the possibility of cumulative impacts of GHG emissions (e.g., with other phases of the OLDMP, proposed projects in the developing OLMP, and Lakebed mining activities).

Geology and Soils

9. Please address the potentially significant long-term effects of the large-scale application of geotextile fabric and gravel on the underlying soil. See comments on Hydrology and Water Quality, below, for related concerns.

Hydrology and Water Quality

10. The EIR should include information on the gravel to be brought onto the Lakebed. The NOP/IS refers to the Keeler Fan gravel site (Gravel Sources, p. 1-13) that was referenced in the Memorandum of Agreement between LADWP and the GBUAPCD (1998 MOA). The 1998 MOA states that gravel used for DCMs "shall have resistance to leaching and erosion. It shall be no more toxic than the gravel analyzed by the District from the Keeler fan site." Please evaluate the potentially significant effects of the gravel leaching contaminants into groundwater or abutting shallow flood areas and the potential impacts on public health, wildlife, and habitat. The EIR should address both the impacts to groundwater quality and any change to the rate of groundwater recharge. The discussion should also provide the specifications for the permeable geotextile fabric to be used under the gravel cover and evaluate the effects of the fabric's permeability related to the above concerns.

11. The EIR should include an evaluation of potential impacts to the existing drainage patterns, both surface and subsurface, and analyze the potential impacts to mining activities on the Lakebed from any changes in drainage patterns.

[1] The State "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

12. As mentioned above in regards to impacts to Biological Resources, the EIR should discuss the potential for the collection and recirculation of tailwater and drainwater in shallow flood areas to concentrate contaminants or toxic chemicals with potential impacts to wildlife and groundwater (p. 1-8, 1st paragraph).

Land Use and Planning

13. Public Trust: Owens Lake is sovereign land held in trust for the people of the State under the Public Trust Doctrine. This common law doctrine ensures the public's right to use California's waterways for navigation, fishing, boating, and other water-oriented activities. Preservation of lands in their natural state to protect scenic and wildlife habitat values is also an appropriate Public Trust use (*Marks* v. *Whitney* (1971) 6 Cal.3d 251). Uses that do not protect or promote Public Trust values, are not water dependent or oriented, and exclude rather than facilitate public access and use are not consistent with the Public Trust Doctrine. The CSLC has the responsibility to manage Owens Lake on behalf of the public to protect these rights and values.

    CSLC staff has not yet approved the specifications of the proposed gravel for the 2.03 square miles of gravel in Phase 8. CSLC staff would like to see the actual appearance of Phase 8 before recommending approval of further areas of gravel cover. As LADWP acknowledged in the lease agreement with CSLC for the Phase 8 gravel cover, there is no assurance that future use of gravel cover will be allowed (Tenth Amendment of Lease PRC 8079.9, section 2(k)). It is the CSLC's position that placement of gravel cover does not protect or promote the Public Trust uses and values of Owens Lake. Phase 7a will be subject to further evaluation by the CSLC taking into account all relevant factors, including other components of the Project that may enhance Public Trust uses and values.

    For additional information on the CSLC and CSLC staff's concerns regarding gravel, please see Calendar Item 50 from the CSLC's 12/10/2010 meeting (available online: http://archives.slc.ca.gov/Meeting_Summaries/2010_Documents/12-10-10/Voting_Record.pdf) and CSLC staff's comment letter on the Phase 8 Dust Control Measures Project Initial Study and Mitigated Negative Declaration, dated August 17, 2010.

Recreation

14. Access and Recreation: As mentioned in the NOP/IS, the OLMP, including its recreation component, is still in development, and no specific areas have yet been identified as most suitable for enhanced recreational or education opportunities. Regardless, because public access and recreation on State lands are key concerns of the Public Trust, CSLC staff requests that the EIR consider the most recent OLMP developments possible in the Recreation discussion of the Project EIR to avoid conflicts between the OLMP and the Project.

Transportation and Traffic

15. The EIR should evaluate the potentially significant impact of gravel hauling and other construction traffic. According to information in the NOP/IS, gravel hauling will result in 240 truck trips per day to two staging areas ("Assuming 25 tons per truck, approximately 3,000 tons per day will be transported to each staging area location." p. 1-15).

Mandatory Findings of Significance

16. Cumulative Impacts: In addition to the potentially significant impacts described in the NOP/IS, the EIR should address the potentially significant cumulative impacts of the Project in conjunction with other projects in the area, including, but not limited to, future dust control projects (Phase 9 and the "Watch Areas") and proposed development of large-scale solar energy (Southern Owens Valley Solar Ranch), as well as any other probable future projects.

Additional Review

17. Alternatives Analysis: The EIR should contain an alternatives analysis that describes a reasonable range of alternatives to the proposed Project.

18. Best Management Practices (BMPs): In concluding that the Project will have less than significant impacts on Geology and Soils, Hazards and Hazardous Materials, and Hydrology and Water Quality, the NOP/IS relies on the implementation of BMPs identified in LADWP's Storm Water Pollution Prevention Plan (SWPPP) (NOP/IS pp. 2-15 and 2-23) and the employment of standard operating procedures for hazardous materials use (p. 2-19). The EIR should include a list or summary of these BMPs and standard operating procedures, in the document's text or as an appendix, to provide transparency in the analyses' determinations of "less than significant".

19. Adequate Mitigation: To avoid the improper deferral of mitigation, mitigation measures should either be presented as specific, feasible, enforceable obligations, or should be presented as formulas containing "performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way" (State CEQA Guidelines § 15126.4(b)).

Thank you for the opportunity to comment on the NOP/IS for the Project. As a trustee and responsible agency, the CSLC will need to consider the Final EIR for the approval of a new lease amendment as specified above and, therefore, we request that you consider our comments prior to adoption of the EIR. Please send additional information on the Project to the CSLC staff listed below as plans become finalized.

Please contact Drew Simpkin, Public Land Management Specialist, at (916) 574-2275 or by email at drew.simpkin@slc.ca.gov, for information concerning our leasing requirements. For questions concerning the environmental review, please contact Sarah Sugar, Environmental Scientist, at (916) 574-2274 or by e-mail at sarah.sugar@slc.ca.gov. Please send any CEQA notices for this and future related projects to the letterhead address, Attn: DEPM.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
Drew Simpkin, CSLC
Sarah Sugar, CSLC
Pamela Griggs, CSLC

bcc: Jennifer DeLeon, CSLC
Colin Connor, CSLC

California Regional Water Quality Control Board
Lahontan Region

Linda S. Adams
Acting Secretary for Environmental Protection

Victorville Office
14440 Civic Drive, Suite 200, Victorville, California 92392
(760) 241-6583 • Fax (760) 241-7308
http://www.waterboards.ca.gov/lahontan

Edmund G. Brown Jr.
Governor

June 24, 2011

File: Environmental Doc Review
Inyo County

Laura Hunter
City of Los Angeles Department of Water and Power
111 N. Hope Street, Room 1050
Los Angeles, CA 90012
FAX: (213) 367-4710

COMMENTS ON NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT, OWENS DRY LAKE PHASE 7A DUST CONTROL MEASURES, LOS ANGELES COUNTY, STATE CLEARINGHOUSE NO. 2011051068

The California Regional Water Quality Control Board, Lahontan Region (Water Board) staff received the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the above-referenced project (Project) on May 26, 2011. The NOP was prepared by the City of Los Angeles Department of Water and Power (LADWP) and included an Initial Study environmental checklist. Our comments on the NOP/Initial Study and the proposed Project are outlined below.

Pursuant to CEQA guidelines, California Code of Regulations (CCR), title 14, section 15096, responsible agencies must specify the scope and content of the environmental information germane to their statutory responsibilities. Water Board staff, acting as a responsible agency, has reviewed the above-referenced document in context as to how well the proposed Project protects water quality, and ultimately, the beneficial use of waters of the State. We expect that LADWP will value our position with respect to protecting and maintaining water quality within the Lahontan region, and request that the following comments be incorporated in the environmental review process.

PROJECT DESCRIPTION

Owens Dry Lake encompasses approximately 110 square miles. LADWP is currently implementing the Owens Lake Dust Mitigation Program (OLDMP) on Owens Dry Lake in order to reduce exceedances of the state and federal particulate matter air quality standards. At present, nearly 40 square miles of dust control measures are being implemented on Owens Dry Lake. These dust control measures have been implemented in phases, with Phase 7 being the most recent phase. In 2008, a Subsequent Environmental Impact Report (SEIR) was prepared to describe the activities of Phase 7. The SEIR evaluated the use of gravel cover, shallow flooding, and managed vegetation as best available control measures (BACMs) for dust suppression. The total project area for Phase 7 was identified as 12.7 square miles. In October 2008, the Water Board issued an Order for Clean Water Act Section 401 Water Quality Certification (401 WQC) authorizing the implementation of Phase 7 dust control measures, as outlined in the SEIR. Since the 401 WQC was granted, LADWP has amended the proposed project to modify the use and application of the BACMs over an area totaling 6 to 7 square miles within the original 12.7 square mile project footprint. The amended project, identified as Phase 7a, is the subject of this review.

The Phase 7a Project area totals approximately 6 to 7 square miles of Owens Dry Lake and includes the implementation of gravel cover, shallow flooding, and managed vegetation, within six previously uncontrolled subareas totaling approximately 3.1 square miles. In addition, the Project will also include the modification of existing BACMs from strictly shallow flooding to a combination of shallow flooding, gravel cover, and managed vegetation over a separate area totaling approximately 4 square miles.

The source water used in the dust control mitigation program is from the City of Los Angeles aqueduct and recycled return water from irrigation areas. The Water Board regulates the discharge of this water for dust control purposes under Revised Waste Discharge Requirements, Board Order Number R6V-2006-0036.

AUTHORITY

State law assigns responsibility for protection of water quality in the Lahontan region to the California Regional Water Quality Control Board, Lahontan Region (Water Board). The *Water Quality Control Plan for the Lahontan Region* (Basin Plan) contains policies that the Water Board uses with other laws and regulations to protect water quality within the region. All surface waters are considered waters of the State, which include, but are not limited to, drainages, streams, washes, ponds, pools, or wetlands, and may be permanent or intermittent. All waters of the State are protected under California law. Additional protection is provided for waters of the U.S, under the Federal Clean Water Act. Based on our review of the DEIR, project components may involve alteration, dredging, filling, and/or excavating activities in waters of the State. Such activities constitute a discharge of waste[1], as defined in California Water Code (CWC), section 13050, and could affect the quality of waters of the State.

The State Water Resources Control Board (State Water Board) and the Lahontan Water Board regulate discharges of waste in order to protect the water quality and, ultimately, the beneficial uses of waters of the State. The Basin Plan provides guidance regarding water quality and how the Lahontan Water Board may regulate activities that have the potential to affect water quality within the region. The Basin Plan includes prohibitions, water quality standards, and policies for implementation of standards. The Basin Plan can be accessed via the Water Board's web site (http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/references.shtml).

The Project is located within the Lower Owens River Hydrologic Area. All surface water and groundwater resources within the Lower Owens River Hydrologic Area are waters

[1] "Waste" is defined in the Basin Plan to include any waste or deleterious material including, but not limited to, waste earthen materials (such as soil, silt, sand, clay, rock, or other organic or mineral material) and any other waste as defined in the California Water Code, section13050(d).

of the State. Water quality objectives, both numerical and narrative, for waters of the State, including those within the Lower Owens River Hydrologic Area, are outlined in Chapter 3 of the Basin Plan. The Project proponent must comply with all applicable water quality standards and prohibitions, including provisions of the Basin Plan.

SPECIFIC COMMENTS

Our specific comments on the Hydrology and Water Quality section of the Initial Study are outlined below.

1. To avoid and minimize impacts, we request that the Project proponent utilize existing access roads to the maximum extent practical.

2. The environmental document must clearly define all waters of the State within the Project area. All permanent and temporary impacts to waters of the State as a result of Project implementation must be identified and quantified. Efforts must be made to avoid impacts and must be documented in the environmental review process. All unavoidable permanent impacts must be minimized to the maximum extent practical.

3. The environmental document should identify and discuss post-construction maintenance requirements for the access roads and berms. Thresholds for maintenance should be identified that, when exceeded, would trigger additional permitting requirements from either federal, State, or local authorities having jurisdiction over the Project.

4. The 401 WQC issued in October 2008 authorized specific activities described for Phase 7 of the dust mitigation project. Be advised that, at minimum, the Water Board will either need to amend the existing 401 WQC to include the modified project components or revoke the Order and issue a new 401 WQC based on the revised Project description. **The Project proponent is urged to consult with Water Board staff to determine whether a new application for 401 WQC must be submitted for Phase 7a.**

5. Water from the City of Los Angeles aqueduct, combined with recycled return water from irrigation areas, are utilized as the source water in the dust control mitigation program. The Water Board regulates the discharge of this water under Revised Waste Discharge Requirements, Board Order Number R6V-2006-0036. It may be necessary to revise Board Order R6V-2006-0036 to accommodate the increased volume of water need to support the current and proposed water demands of the dust mitigation program. **The Project proponent is urged to consult with Water Board staff to determine the applicability of the existing requirements of Board Order R6V-2006-0036.**

CUMULATIVE IMPACTS TO WATERS OF THE STATE

Watersheds are complex natural systems in which physical, chemical, and biological components interact to create the beneficial uses of water. Poorly planned development and redevelopment upsets these natural interactions and degrades water quality through a network of interrelated effects. The primary impacts of poorly planned development and redevelopment projects on water quality are:

- Direct, indirect, and cumulative impacts – plans must include a comprehensive analysis of the direct, indirect, and cumulative physical impacts of filling and excavation of wetlands, riparian areas, and other waters of the State, performed from the site to the watershed level;
- Pollutants – the generation of pollutants during and after construction;
- Hydrologic modification – the alteration of flow regimes and groundwater; and
- Watershed-level effects – the disruption of watershed-level aquatic function, including pollutant removal, floodwater retention, and habitat connectivity.

These impacts have the potential to degrade water quality and impair a number of beneficial uses by reducing the available riparian habitat and eliminating the natural buffer system to filter runoff and enhance water quality. These impacts typically result in hydrologic changes by decreasing water storage capacity and increasing water flow velocity, which in turn leads to increases in the severity of peak discharges. These hydrologic changes may ultimately lead to near-total loss of natural functions and values, resulting in the increased need for engineered solutions to re-establish the disrupted flow patterns. Many examples of such degradation exist in California and elsewhere. The Water Boards are mandated to prevent such degradation.

Combined, the dust mitigation phases cover a significant portion of Owens Dry Lake, and the cumulative impacts of these phases on water quality and hydrology overtime have not been fully evaluated. **We urge LADWP to provide a more thorough analysis of cumulative impacts in the environmental document.** The analysis should consider the point impacts of phases planned and constructed and evaluate, at minimum, the potential impacts to groundwater recharge due to compacted soils, changes in the hydrology of the respective watershed(s) and potential flooding implications, cumulative changes in groundwater quality and chemistry, and habitat connectivity. The cumulative impacts analysis should identify both regional and project-specific mitigation measures that, when implemented, will reduce potential impacts to a less than significant level.

Thank you for the opportunity to comment on the NOP for the Owens Lake Phase 7a Dust Control Measures Project. We look forwarding to reviewing the Draft Environmental Impact Report when it becomes available for review. If you have any questions regarding this letter, please contact Jan Zimmerman at (760) 241-7376 (jzimmerman@waterboards.ca.gov).

Sincerely,

Patrice Copeland

Patrice Copeland, PG
Senior Engineering Geologist
Chief, S. Basin Land Disposal Unit

cc: State Clearinghouse (SCH No. 2011051068)
Paul Amato, Wetlands Regulatory Office, USEPA, Region 9
(via email, Amato.Paul@epamail.epa.gov)
Bruce Henderson, US Army Corps of Engineers
(via email, Bruce.A.Henderson@usace.army.mil)

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DEPARTMENT OF TRANSPORTATION
DISTRICT 9
500 SOUTH MAIN STREET
BISHOP, CA 93514
PHONE (760) 872-0785
FAX (760) 872-0754
TTY 711 (760) 872-0785
www.dot.ca.gov

Flex your power!
Be energy efficient!

June 3, 2011

Laura Hunter
Los Angeles Dept. of Water and Power (DWP)
111 North Hope Street
Los Angeles, California 90012

File: CA
NOP DEIR
SCH#: 2011051068

Dear Ms. Hunter:

Owens Dry Lake Phase 7A Dust Control Measures - Notice of Preparation (NOP) of a Draft Environmental Impact Report

Thank you for giving the California Department of Transportation (Caltrans) District 9 the opportunity to comment during the NOP phase for additional dust control measures on Owens Dry Lake. We have the following comments:

- The Caltrans encroachment permits for gravel transport routes are current. The permits address access, maintenance, legal sized load restrictions and traffic control (i.e. "Traffic Work Safety Plan") items.

- Please clarify the Dirty Sox Springs Road/State Route 190 area regarding vehicle equipment and staging (Figure 5).

Caltrans values our cooperative working relationship with the DWP regarding project impacts upon State transportation facilities in the Owens Valley. I may be contacted at (760) 872-0785, with any questions.

Sincerely,

Gayle J. Rosander

GAYLE J. ROSANDER
IGR/CEQA Coordinator

c: State Clearinghouse
Steve Wisniewski, Caltrans

Appendix C

Geotextile Material Safety Data Sheet

June 4, 2009

Re: Material Safety Data Sheets

To Whom It May Concern:

This letter is for your file to insure compliance with O.S.H.A. regulations and standards covering X-series, FW-series, HP-series woven geotextiles, GC-series woven geotextiles, N-series and S-series nonwoven geotextiles per your request for Material Safety Data Sheets.

X-series, FW-series, HP-series woven geotextiles, GC-series woven geotextiles, N-series and S-series nonwoven geotextiles are NON-HAZARDOUS ARTICLES as defined by the Federal Hazard Communication Standard CFR 1910.1299 therefore, no Material Safety Data sheet is required for these products.

Sincerely,

Nicole Benton
Product Manager

materials that make a difference

365 South Holland Drive
Pendergrass, GA 30567

MATERIAL SAFETY DATA SHEET

DO NOT USE THIS PRODUCT UNTIL YOU HAVE READ THIS INFORMATION

MSDS Prepared By:
Nicolon Corporation
365 South Holland Drive
Pendergrass, GA 30567

Chemtrec Emergency:

24-hour Phone:	(800) 424-9300
Nicolon Phone:	(706) 693-2226
Date Prepared:	December 2003
Revised:	January 2010

Section 1: General Information

Trade Names and Synonyms: Mirafi® Products: **N-Series and S-Series, MPV Nonwoven Fabrics**

Chemical Names and Family: Polypropylene nonwoven fabrics
Product Use: Construction Products
HMIS Ratings: Health 0, Fire 1, Reactivity 0, PPE (see section 8)

Section 2: Hazardous Ingredients/Identity Information

Ingredient (Chemical Name, CAS#, and Common Name)	OSHA PEL or TWA	ACGIH TLV	Weight %
Polypropylene resin (9003-07-0)	N/A	N/A	94 – 99%
Recycled PP/PE	N/A	N/A	0 – 5%
Carbon Black(1333-86-4)	3.5 mg/cm TWA	3.5 mg/cm TWA	1%
Minor Additives (Mixture)	N/A	N/A	< 1%

Section 3: Hazards Identification/Potential Effects

Overview: Based upon pertinent data available, polypropylene cloth products are not hazardous under OSHA Hazard Communication Standard (29 CFR 1910.120).

Routes of Exposure:

Inhalation:	Not likely, under normal use
Skin contact:	Yes
Skin absorption:	No
Eye Contact:	Yes

Symptoms of Acute Overexposure: Product may contain surface applied process lubricants that may cause skin to dry out.

Symptoms of Chronic Overexposure: No known health effects have been observed with normal use.

Medical Conditions Aggravated By Exposure: Persons with preexisting skin disorders may be susceptible to effects of the material.

Carcinogenity: See Section 11

Section 4: First Aid Procedures

Eye Contact: As with any foreign object, flush with water. If pain or irritation persists, consult physician.
Skin Contact: Wash with soap and water. In case of irritation, consult physician.
Ingestion: N/A

Section 5: Fire and Explosion Hazard Data

Flash Point (Method Used): Greater than 300ºC
Flammable Limits: **LEL**: N/A **UEL**: N/A
Extinguishing Media: _x_ Water Fog _x_ Carbon Dioxide
_x_ Regular Foam _x_ Dry Chemical ___ Other
Special Fire Fighting Procedures: Material will not burn unless preheated. Over heated or molten material may burn slowly with dense smoke. As with any fire, wear approved self-contained breathing apparatus.
Unusual Fire and Explosion Hazards: Not applicable

Section 6: Accidental Release Measures

No environmental threat is expected from release.

Section 7: Handling and Storage

Storage: Store away from oxidizing materials, in cool dry area. Avoid direct sunlight.

Handling: No special handling unless large rolls are used. Use lifting devices as necessary. If product is molten, avoid contact with skin or eyes

Section 8: Exposure Controls/ Rolls may be heavy; use lifting devices for moving Personal Protection

Ventilation Requirements: Not required for normal use. If process generates dust, use ventilation to keep exposure below exposure limit.
Personal Protective Equipment:

- **Eye Protection:** Not normally required.
- **Skin Protection:** Not normally required. Persons with exposure sensitivity may need suitable gloves.
- **Respiratory Protection:** Not required, unless dust generated
- Other Clothing and Equipment: Normal work clothing.

Section 9: Physical and Chemical

Boiling Point: N/A
Vapor Pressure (mm Hg.): N/A
Vapor Density (Air =1): N/A
Solubility in Water: Not soluble
Specific Gravity (H_2O=1): Less than 1
Evaporation Rate (Butyl Acetate=1): N/A
Melting Point: about 320 degrees F
Appearance and Odor: Fabric wound on a cardboard core.

Section 10: Stability and Reactivity

Stability: _x_ Stable   ___ Unstable
Conditions to Avoid: Keep away from sparks or flame
Incompatibility (Materials to Avoid): Strong oxidizers.
Hazardous Polymerization:_x_ May Occur   __Will Not Occur
Hazardous Decomposition Products (Including Combustion Products): carbon dioxide, carbon monoxide, hydrocarbons, etc.

Section 11: Toxicological Information

Eye Effects: Not toxic
Skin Effects: Not toxic
Target Organs: None
Carcinogenity: Carbon black is classified as a Group 2B possible human carcinogen. When encapsulated in a plastic matrix, risk of exposure is minimized.
Mutagenitive and Reproductive Effects: Not considered to be a hazard

Section 12: Ecological Information

Environmental Data: Not expected to be hazardous to the environment in present form.

Section 13: Disposal Considerations

Disposal: Spent material should be recycled or disposed according to current regulations
RCRA Hazard Class: Does not contain RCRA regulated materials.

Section 14: Transport information

DOT Classification: Non-hazardous

Section 15: Regulatory Information

This product may contain ingredients in the fiber lubricant and additives in “De Minimus” quantities, which would be listed in SARA 311/313: Acute Health Hazard. At levels under 0.01% by weight, no “Reportable Quantities” will be reached with typical fabric inventories.

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Appendix D

Air Pollutant and GHG Calculations

Table D-1
Construction Equipment Assumptions
Owens Lake Dust Control Measures - Phase 7a

Equipment	FUEL	HP	No of Equipment	Hrs Per Day	Days in Service
Shallow Flood Areas - Turnout Facilities					
Earthen Pad Construction					
Dozer	DIESEL	358	1	5	55
Excavator	DIESEL	157	1	5	55
Dump Truck	DIESEL	381	2	2	55
Vibratory Roller Compactor	DIESEL	84	1	6	55
Subtotal					
Mainline Connection					
Vactor Truck	DIESEL	250	1	6	60
Excavator	DIESEL	157	1	6	60
Excavator with roller bucket or sheep-foot	DIESEL	157	1	6	60
Dump Truck	DIESEL	381	1	6	60
Vibratory Roller Compactor	DIESEL	84	2	6	60
Subtotal					
Submain and Header Installation					
Vactor Truck	DIESEL	250	1	2	70
Excavator	DIESEL	157	1	5	70
Excavator with roller bucket or sheets foot	DIESEL	157	1	5	70
Wacker Compactor	GAS	5.5	1	6	70
Subtotal					
Underground Electrical Conduit Installation					
Backhoe	DIESEL	75	1	5	120
Dump Truck	DIESEL	381	1	2	120
Ready Mix Truck	DIESEL	250	1	4	120
Wacker Compactor	GAS	5.5	1	6	120
Subtotal					
Subgrade Preparation					
Dump Truck	DIESEL	381	1	2	40
Grader	DIESEL	162	1	5	40
Vibratory Roller Compactor	DIESEL	84	1	6	40
Wacker Compactor	GAS	5.5	1	6	40
Subtotal					
Construct Concrete Pads					
Ready Mix Truck	DIESEL	250	1	4	12
Subtotal					
Install Above Grade Piping, etc.					
Ready Mix Truck	DIESEL	250	1	4	240
Telehandler	DIESEL	250	1	5	240
Forklift	DIESEL	83	1	5	240
Boom Truck	DIESEL	250	1	2	240
Subtotal					

Table D-1
Construction Equipment Assumptions
Owens Lake Dust Control Measures - Phase 7a

Equipment	FUEL	HP	No of Equipment	Hrs Per Day	Days in Service
Shallow Flood Areas					
HDPE Submain and Flush Pipe Installation					
Trencher	DIESEL	69	2	4	350
Excavator	DIESEL	157	2	4	350
Dozer	DIESEL	358	2	5	350
Scraper	DIESEL	356	2	5	350
Generator	DIESEL	50	2	8	350
Drain Line					
Tractor	DIESEL	75	2	5	300
Trencher	DIESEL	69	2	4	300
Dozer	DIESEL	358	2	5	300
Scraper	DIESEL	356	2	5	300
HDPE Laterals and Risers Installation					
Tractor	DIESEL	75	2	5	350
Trencher	DIESEL	69	2	8	350
Dozer	DIESEL	358	2	5	350
Scraper	DIESEL	356	2	5	350
HDPE Fusing Machine (Generator)	DIESEL	84	2	5	350
Quads	DIESEL	50	2	8	350
High Voltage Cable					
Backhoe	DIESEL	75	1	5	200
Tractor with cable reel	DIESEL	75	1	4	200
Dump Truck	DIESEL	381	1	2	200
Ready Mix Truck	DIESEL	250	1	2	200
Motor Grader	DIESEL	162	1	5	200
Miscellaneous Concrete Structures					
Excavator	DIESEL	157	2	4	280
Dozer	DIESEL	358	1	5	280
Loader	DIESEL	75	1	5	280
Dump Truck	DIESEL	381	3	2	280
Ready Mix Trucks	DIESEL	250	4	2	280
Wacker Compactor	GAS	5.5	1	5	280
Flushing and Testing					
Quads	DIESEL	50	2	2	60
Managed Vegetation Areas					
Excavation, Soil Conditioning, and Land Leveling					
Dozer	DIESEL	358	1	5	350
Farm Tractor	DIESEL	75	1	5	350
Quad Tractor with Scraper	DIESEL	50	4	5	350

Table D-1
Construction Equipment Assumptions
Owens Lake Dust Control Measures - Phase 7a

Equipment	FUEL	HP	No of Equipment	Hrs Per Day	Days in Service
Road					
Dozer	DIESEL	358	1	5	250
Motor Grader	DIESEL	162	1	2	250
Skid Steer	DIESEL	37	1	2	250
Dump Trucks	DIESEL	381	2	2	250
Quad Tractor with Scraper	DIESEL	50	4	5	250
Road Base Course and Armoring					
Dump Truck	DIESEL	381	10	5	200
Dozer	DIESEL	358	2	5	200
Loaders	DIESEL	75	2	5	200
Grader	DIESEL	162	1	5	200
HDPE Submain, Laterals, and Risers Installation					
Tractor	DIESEL	75	2	5	350
Trencher	DIESEL	69	2	4	350
Dozer	DIESEL	358	2	5	350
Scraper	DIESEL	356	2	5	350
HDPE Fusing Machine (Generator)	DIESEL	84	2	8	350
Quads	DIESEL	50	2	2	350
Diesel Generator (50 hp)	DIESEL	50	2	8	350
Flushing and Testing					
Quads	DIESEL	50	2	2	60
Seeding and Planting					
Seeding Machine	DIESEL	50	1	8	200
Gravel Installation					
Staging Area Preparation					
Dozer	DIESEL	358	3	5	20
Access Roadways					
Dozer	DIESEL	358	2	5	80
Scraper	DIESEL	356	1	5	80
Gravel Delivery to Stockpile					
Dump Truck (see truck mileage)	DIESEL	381	20	1	130
Dozer	DIESEL	358	3	5	130
Loaders	DIESEL	75	7	5	130
Gravel Delivery from Stockpile to DCM Area					
Dump Trucks (see truck mileage)	DIESEL	381	10	1	130
Geotextile and Gravel Application					
Backhoe/tractor/dozer	DIESEL	75	4	5	130
D6 Dozers	DIESEL	358	8	5	130
For Gravel Cover and Other Phase 7a DCMs					
Water Truck	DIESEL	250	5	5	390
Fuel Trucks	DIESEL	250	3	5	390

Table D-1
Construction Equipment Assumptions
Owens Lake Dust Control Measures - Phase 7a

Equipment	FUEL	HP	No of Equipment	Hrs Per Day	Days in Service
Tillage					
Riprap Reinforcement of Existing Berm					
Dump Truck	DIESEL	381	10	2	20
Dozer	DIESEL	358	2	5	20
Loaders	DIESEL	75	2	5	20
Grader	DIESEL	162	1	5	20
HDPE Laterals and Risers Installation					
Tractor	DIESEL	75	1	5	100
Trencher	DIESEL	69	1	8	100
Dozer	DIESEL	358	1	5	100
Scraper	DIESEL	356	1	5	100
HDPE Fusing Machine (Generator)	DIESEL	84	1	5	100
Quads	DIESEL	50	1	8	100
Flushing and Testing					
Quads	DIESEL	50	2	2	10
Tillage					
Dozer	DIESEL	358	6	5	40

All Activities		No.	Avg Speed mph	VMT	Days
Flatbed Truck - All Deliveries	Heavy Duty Truck, Diesel	1	20	80	390
Fuel and Water Trucks - All Activities	Medium Duty Truck, Diesel	8	20	80	390
Light Duty Trucks - All Activities	Light Duty Truck, Diesel	40	20	80	390

Table D-2
Construction Heavy Equipment Emissions
Owens Lake Dust Control Measures - Phase 7a

Equipment	FUEL	HP	ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	Emission Factors PM10 (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)	N2O (lb/hr)	No of Equipment	Hrs Per Day	Days in Service	ROG lbs/day	CO lbs/day	NOX lbs/day	Emissions SOX lbs/day	PM10 lbs/day	PM2.5 lbs/day	CO2 lbs/day	CH4 lbs/day	N2O lbs/day	ROG tons (total)	CO tons (total)	NOX tons (total)	Emission, tons (total) SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)	CO2 tons (total)	CH4 tons (total)	N2O tons (total)
Shallow Flood Areas - Turnout Facilities																																
Earthen Pad Construction																																
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	1	5	60	1.27	4.75	11.19	0.01	0.43	0.39	1296	0.11	1.06	0.038	0.143	0.336	0.000	0.013	0.012	35	0.003	0.029
Excavator	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	1	5	60	0.60	3.33	4.47	0.01	0.26	0.23	561	0.05	0.42	0.018	0.100	0.134	0.000	0.008	0.007	15	0.001	0.012
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	2	2	60	0.87	2.54	7.15	0.01	0.25	0.23	1089	0.08	0.68	0.026	0.076	0.214	0.000	0.008	0.007	30	0.002	0.018
Vibratory Roller Compactor	DIESEL	84	0.0986	0.4063	0.6253	0.0007	0.0534	0.0475	59.0	0.0089	0.0594	1	6	60	0.59	2.44	3.75	0.00	0.32	0.28	354	0.05	0.36	0.018	0.073	0.113	0.000	0.010	0.009	10	0.001	0.010
Subtotal															**3.33**	**13.07**	**26.56**	**0.03**	**1.26**	**1.12**	**3301**	**0.30**	**2.52**	**0.10**	**0.39**	**0.80**	**0.00**	**0.04**	**0.03**	**90**	**0.01**	**0.07**
Mainline Connection																																
Vactor Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	6	80	0.84	2.30	7.42	0.01	0.25	0.22	999	0.08	0.71	0.034	0.092	0.297	0.000	0.010	0.009	36	0.003	0.026
Excavator	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	1	6	80	0.72	4.00	5.36	0.01	0.31	0.27	673	0.07	0.51	0.029	0.160	0.214	0.000	0.012	0.011	24	0.002	0.018
Excavator with roller bucket or sheep-foot	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	1	6	80	0.72	4.00	5.36	0.01	0.31	0.27	673	0.07	0.51	0.029	0.160	0.214	0.000	0.012	0.011	24	0.002	0.018
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	1	6	80	1.30	3.82	10.72	0.02	0.38	0.34	1634	0.12	1.02	0.052	0.153	0.429	0.001	0.015	0.014	59	0.004	0.037
Vibratory Roller Compactor	DIESEL	84	0.0986	0.4063	0.6253	0.0007	0.0534	0.0475	59.0	0.0089	0.0594	2	6	80	1.18	4.88	7.50	0.01	0.64	0.57	708	0.11	0.71	0.047	0.195	0.300	0.000	0.026	0.023	26	0.004	0.026
Subtotal															**4.77**	**19.00**	**36.36**	**0.05**	**1.88**	**1.68**	**4688**	**0.43**	**3.45**	**0.19**	**0.76**	**1.45**	**0.00**	**0.08**	**0.07**	**170**	**0.02**	**0.13**
Submain and Header Installation																																
Vactor Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	2	80	0.28	0.77	2.47	0.00	0.08	0.07	333	0.03	0.24	0.011	0.031	0.099	0.000	0.003	0.003	12	0.001	0.009
Excavator	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	1	5	80	0.60	3.33	4.47	0.01	0.26	0.23	561	0.05	0.42	0.024	0.133	0.179	0.000	0.010	0.009	20	0.002	0.015
Excavator with roller bucket or sheets foot	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	1	5	80	0.60	3.33	4.47	0.01	0.26	0.23	561	0.05	0.42	0.024	0.133	0.179	0.000	0.010	0.009	20	0.002	0.015
Wacker Compactor	GAS	5.5	5.2273	224.6638	4.0282	0.0177	3.6001	3.2041	429.4472	0.3240	0.6410	1	6	80	31.36	1347.98	24.17	0.11	21.60	19.22	2577	1.94	3.85	1.255	53.919	0.967	0.004	0.864	0.769	94	0.071	0.140
Subtotal															**32.85**	**1355.42**	**35.58**	**0.12**	**22.20**	**19.75**	**4032**	**2.08**	**4.93**	**1.31**	**54.22**	**1.42**	**0.00**	**0.89**	**0.79**	**146**	**0.08**	**0.18**
Underground Electrical Conduit Installation																																
Backhoe	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	1	5	120	0.35	1.76	2.28	0.00	0.19	0.17	259	0.03	0.22	0.021	0.106	0.137	0.000	0.011	0.010	14	0.002	0.012
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	1	2	120	0.43	1.27	3.57	0.01	0.13	0.11	545	0.04	0.34	0.026	0.076	0.214	0.000	0.008	0.007	30	0.002	0.018
Ready Mix Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	4	120	0.56	1.53	4.95	0.01	0.16	0.15	666	0.05	0.47	0.034	0.092	0.297	0.000	0.010	0.009	36	0.003	0.026
Wacker Compactor	GAS	5.5	5.2273	224.6638	4.0282	0.0177	3.6001	3.2041	429.4472	0.3240	0.6410	1	6	120	31.36	1347.98	24.17	0.11	21.60	19.22	2577	1.94	3.85	1.882	80.879	1.450	0.006	1.296	1.153	140	0.106	0.209
Subtotal															**32.70**	**1352.55**	**34.97**	**0.12**	**22.08**	**19.65**	**4046**	**2.06**	**4.87**	**1.96**	**81.15**	**2.10**	**0.01**	**1.33**	**1.18**	**220**	**0.11**	**0.27**
Subgrade Preparation																																
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	1	2	40	0.43	1.27	3.57	0.01	0.13	0.11	545	0.04	0.34	0.009	0.025	0.071	0.000	0.003	0.002	10	0.001	0.006
Grader	DIESEL	162	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	5	40	0.70	1.92	6.19	0.01	0.21	0.18	833	0.06	0.59	0.014	0.038	0.124	0.000	0.004	0.004	15	0.001	0.011
Vibratory Roller Compactor	DIESEL	84	0.0986	0.4063	0.6253	0.0007	0.0534	0.0475	59.0	0.0089	0.0594	1	6	40	0.59	2.44	3.75	0.00	0.32	0.28	354	0.05	0.36	0.012	0.049	0.075	0.000	0.006	0.006	6	0.001	0.006
Wacker Compactor	GAS	5.5	5.2273	224.6638	4.0282	0.0177	3.6001	3.2041	429.4472	0.3240	0.6410	1	6	40	31.36	1347.98	24.17	0.11	21.60	19.22	2577	1.94	3.85	0.627	26.960	0.483	0.002	0.432	0.384	47	0.035	0.070
Subtotal															**33.09**	**1353.61**	**37.68**	**0.12**	**22.25**	**19.81**	**4308**	**2.10**	**5.13**	**0.66**	**27.07**	**0.75**	**0.00**	**0.45**	**0.40**	**78**	**0.04**	**0.09**
Construct Concrete Pads																																
Ready Mix Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	4	12	0.56	1.53	4.95	0.01	0.16	0.15	666	0.05	0.47	0.003	0.009	0.030	0.000	0.001	0.001	4	0.000	0.003
Subtotal															**0.56**	**1.53**	**4.95**	**0.01**	**0.16**	**0.15**	**666**	**0.05**	**0.47**	**0.00**	**0.01**	**0.03**	**0.00**	**0.00**	**0.00**	**4**	**0.00**	**0.00**
Install Above Grade Piping, etc.																																
Ready Mix Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	4	240	0.56	1.53	4.95	0.01	0.16	0.15	666	0.05	0.47	0.067	0.184	0.594	0.001	0.020	0.018	73	0.005	0.051
Telehandler	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	5	240	0.70	1.92	6.19	0.01	0.21	0.18	833	0.06	0.59	0.084	0.230	0.742	0.001	0.025	0.022	91	0.007	0.064
Forklift	DIESEL	83	0.0438	0.2176	0.2788	0.0004	0.0241	0.0215	31.2	0.0040	0.0265	1	5	240	0.22	1.09	1.39	0.00	0.12	0.11	156	0.02	0.13	0.026	0.131	0.167	0.000	0.014	0.013	17	0.002	0.014
Boom Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	2	240	0.28	0.77	2.47	0.00	0.08	0.07	333	0.03	0.24	0.034	0.092	0.297	0.000	0.010	0.009	36	0.003	0.026
Subtotal															**1.76**	**5.31**	**15.00**	**0.02**	**0.57**	**0.51**	**1988**	**0.16**	**1.43**	**0.21**	**0.64**	**1.80**	**0.00**	**0.07**	**0.06**	**216**	**0.02**	**0.16**
Shallow Flood Areas																																
HDPE Submain and Flush Pipe Installation																																
Trencher	DIESEL	69	0.1281	0.4684	0.7862	0.0008	0.0669	0.0595	64.9	0.0116	0.0747	2	4	390	1.02	3.75	6.29	0.01	0.53	0.48	519	0.09	0.60	0.200	0.731	1.227	0.001	0.104	0.093	92	0.016	0.106
Excavator	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	2	4	390	0.97	5.33	7.15	0.01	0.41	0.36	898	0.09	0.68	0.188	1.040	1.393	0.002	0.080	0.071	159	0.015	0.120
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	390	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.496	1.853	4.366	0.005	0.169	0.151	459	0.041	0.376
Scraper	DIESEL	356	0.3186	1.2113	2.8288	0.0032	0.1099	0.0978	321	0.0287	0.2687	2	5	390	3.19	12.11	28.29	0.03	1.10	0.98	3214	0.29	2.69	0.621	2.362	5.516	0.006	0.214	0.191	569	0.051	0.475
Generator	DIESEL	50	0.0872	0.2639	0.2847	0.0004	0.0234	0.0208	30.6	0.0079	0.0270	2	8	390	1.40	4.22	4.55	0.01	0.37	0.33	490	0.13	0.43	0.272	0.823	0.888	0.001	0.073	0.065	87	0.022	0.077
Subtotal															**9.12**	**34.92**	**68.67**	**0.08**	**3.29**	**2.93**	**7713**	**0.82**	**6.52**	**1.78**	**6.81**	**13.39**	**0.02**	**0.64**	**0.57**	**1365**	**0.15**	**1.15**
Drain Line																																
Tractor	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	2	5	390	0.69	3.53	4.56	0.01	0.38	0.34	517	0.06	0.43	0.135	0.688	0.890	0.001	0.075	0.066	92	0.011	0.077
Trencher	DIESEL	69	0.1281	0.4684	0.7862	0.0008	0.0669	0.0595	64.9	0.0116	0.0747	2	4	390	1.02	3.75	6.29	0.01	0.53	0.48	519	0.09	0.60	0.200	0.731	1.227	0.001	0.104	0.093	92	0.016	0.106
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	390	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.496	1.853	4.366	0.005	0.169	0.151	459	0.041	0.376
Scraper	DIESEL	356	0.3186	1.2113	2.8288	0.0032	0.1099	0.0978	321	0.0287	0.2687	2	5	390	3.19	12.11	28.29	0.03	1.10	0.98	3214	0.29	2.69	0.621	2.362	5.516	0.006	0.214	0.191	569	0.051	0.475
Subtotal															**7.45**	**28.89**	**61.53**	**0.07**	**2.89**	**2.57**	**6843**	**0.67**	**5.85**	**1.45**	**5.63**	**12.00**	**0.01**	**0.56**	**0.50**	**1211**	**0.12**	**1.03**
HDPE Laterals and Risers Installation																																
Tractor	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	2	5	390	0.69	3.53	4.56	0.01	0.38	0.34	517	0.06	0.43	0.135	0.688	0.890	0.001	0.075	0.066	92	0.011	0.077
Trencher	DIESEL	69	0.1281	0.4684	0.7862	0.0008	0.0669	0.0595	64.9	0.0116	0.0747	2	8	390	2.05	7.49	12.58	0.01	1.07	0.95	1038	0.18	1.20	0.400	1.461	2.453	0.002	0.209	0.186	184	0.033	0.211
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	390	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.496	1.853	4.366	0.005	0.169	0.151	459	0.041	0.376
Scraper	DIESEL	356	0.3186	1.2113	2.8288	0.0032	0.1099	0.0978	321	0.0287	0.2687	2	5	390	3.19	12.11	28.29	0.03	1.10	0.98	3214	0.29	2.69	0.621	2.362	5.516	0.006	0.214	0.191	569	0.051	0.475
HDPE Fusing Machine (Generator)	DIESEL	84	0.1106	0.4905	0.7587	0.0009	0.0590	0.0525	77.9	0.0100	0.0721	2	5	390	1.11	4.91	7.59	0.01	0.59	0.53	779	0.10	0.72	0.216	0.957	1.480	0.002	0.115	0.102	138	0.018	0.128
Quads	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	2	8	390	6.52	10.19	0.00	0.02	0.08	0.07	22	0.41	0.01	1.272	1.988	0.000	0.004	0.015	0.014	4	0.072	0.001
Subtotal															**16.10**	**47.74**	**75.41**	**0.11**	**4.09**	**3.64**	**8163**	**1.27**	**7.17**	**3.14**	**9.31**	**14.71**	**0.02**	**0.80**	**0.71**	**1444**	**0.22**	**1.27**
High Voltage Cable																																
Backhoe	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	1	5	300	0.35	1.76	2.28	0.00	0.19	0.17	259	0.03	0.22	0.052	0.265	0.342	0.000	0.029	0.026	35	0.004	0.030
Tractor with cable reel	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	1	4	300	0.28	1.41	1.83	0.00	0.15	0.14	207	0.03	0.17	0.042	0.212	0.274	0.000	0.023	0.020	28	0.003	0.024
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	1	2	300	0.43	1.27	3.57	0.01	0.13	0.11	545	0.04	0.34	0.065	0.191	0.536	0.001	0.019	0.017	74	0.005	0.046
Ready Mix Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	2	300	0.28	0.77	2.47	0.00	0.08	0.07	333	0.03	0.24	0.042	0.115	0.371	0.001	0.012	0.011	45	0.003	0.032
Motor Grader	DIESEL	162	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	1	5	300	0.70	1.92	6.19	0.01	0.21	0.18	833	0.06	0.59	0.105	0.288	0.928	0.001	0.031	0.028	113	0.009	0.080
Subtotal															**2.04**	**7.13**	**16.34**	**0.02**	**0.76**	**0.68**	**2176**	**0.18**	**1.55**	**0.31**	**1.07**	**2.45**	**0.00**	**0.11**	**0.10**	**296**	**0.03**	**0.21**
Miscellaneous Concrete Structures																																
Excavator	DIESEL	157	0.1208	0.6668	0.8932	0.0013	0.0512	0.0456	112	0.0109	0.0848	2	4	300	0.97	5.33	7.15	0.01	0.41	0.36	898	0.09	0.68	0.145	0.800	1.072	0.002	0.061	0.055	122	0.012	0.092
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	1	5	300	1.27	4.75	11.19	0.01	0.43	0.39	1296	0.11	1.06	0.191	0.713	1.679	0.002	0.065	0.058	176	0.016	0.145
Loader	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	1	5	300	0.35	1.76	2.28	0.00	0.19	0.17	259	0.03	0.22	0.052	0.265	0.342	0.000	0.029	0.026	35	0.004	0.030
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	3	2	300	1.30	3.82	10.72	0.02	0.38	0.34	1634	0.12	1.02	0.195	0.573	1.608	0.002	0.057	0.051	222	0.016	0.139
Ready Mix Trucks	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	4	2	300	1.12	3.07	9.90	0.01	0.33	0.29	1332	0.10	0.94	0.168	0.460	1.485	0.002	0.049	0.044	181	0.014	0.128
Wacker Compactor	GAS	5.5	5.2273	224.6638	4.0282	0.0177	3.6001	3.2041	429.4472	0.3240	0.6410	1	5	300	26.14	1123.32	20.14	0.09	18.00	16.02	2147	1.62	3.21	3.920	168.498	3.021	0.013	2.700	2.403	292	0.220	0.436
Subtotal															**31.14**	**1142.06**	**61.38**	**0.15**	**19.75**	**17.57**	**7566**	**2.07**	**7.12**	**4.67**	**171.31**	**9.21**	**0.02**	**2.96**	**2.64**	**1030**	**0.28**	**0.97**
Flushing and Testing																																
Quads	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	2	2	60	1.63	2.55	0.00	0.01	0.02	0.02	5	0.10	0.00	0.049	0.076	0.000	0.000	0.001	0.001	0	0.003	0.000
Subtotal															**1.63**	**2.55**	**0.00**	**0.01**	**0.02**	**0.02**	**5**	**0.10**	**0.00**	**0.05**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0.00**	**0.00**
Managed Vegetation Areas																																
Excavatio, Soil Conditioning, and Land Leveling																																
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	1	5	390	1.27	4.75	11.19	0.01	0.43	0.39	1296	0.11	1.06	0.248	0.927	2.183	0.002	0.085	0.075	229	0.020	0.188
Farm Tractor	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	1	5	390	0.35	1.76	2.28	0.00	0.19	0.17	259	0.03	0.22	0.068	0.344	0.445	0.001	0.037	0.033	46	0.006	0.038
Quad Tractor with Scraper	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	4	5	390	8.15	12.74	0.00	0.03	0.10	0.09	27	0.51	0.01	1.590	2.485	0.000	0.005	0.019	0.017	5	0.090	0.002
Subtotal															**9.77**	**19.26**	**13.48**	**0.04**	**0.72**	**0.64**	**1582**	**0.65**	**1.29**	**1.91**	**3.76**	**2.63**	**0.01**	**0.14**	**0.13**	**280**	**0.12**	**0.23**

Table D-2
Construction Heavy Equipment Emissions
Owens Lake Dust Control Measures - Phase 7a

			Emission Factors												Emissions									Emission, tons (total)								
Equipment	FUEL	HP	ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM10 (lb/hr)	PM2.5 (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)	N2O (lb/hr)	No of Equipment	Hrs Per Day	Days in Service	ROG lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	PM10 lbs/day	PM2.5 lbs/day	CO2 lbs/day	CH4 lbs/day	N2O lbs/day	ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)	CO2 tons (total)	CH4 tons (total)	N2O tons (total)
Road																																
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	1	5	250	1.27	4.75	11.19	0.01	0.43	0.39	1296	0.11	1.06	0.159	0.594	1.399	0.002	0.054	0.048	147	0.013	0.121
Motor Grader	DIESEL	162	0.1467	0.7345	1.1193	0.0014	0.0631	0.0562	124	0.0132	0.1063	1	2	250	0.29	1.47	2.24	0.00	0.13	0.11	248	0.03	0.21	0.037	0.184	0.280	0.000	0.016	0.014	28	0.003	0.024
Skid Steer	DIESEL	37	0.0517	0.2263	0.2279	0.0003	0.0157	0.0140	25.5	0.0047	0.0216	1	2	250	0.10	0.45	0.46	0.00	0.03	0.03	51	0.01	0.04	0.013	0.057	0.057	0.000	0.004	0.003	6	0.001	0.005
Dump Trucks	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	2	2	250	0.87	2.54	7.15	0.01	0.25	0.23	1089	0.08	0.68	0.108	0.318	0.893	0.001	0.032	0.028	124	0.009	0.077
Quad Tractor with Scraper	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	4	5	250	8.15	12.74	0.00	0.03	0.10	0.09	27	0.51	0.01	1.019	1.593	0.000	0.003	0.012	0.011	3	0.057	0.001
Subtotal															**10.69**	**21.96**	**21.04**	**0.05**	**0.94**	**0.84**	**2711**	**0.74**	**2.01**	**1.34**	**2.75**	**2.63**	**0.01**	**0.12**	**0.11**	**307**	**0.08**	**0.23**
Road Base Course and Armoring																																
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	10	5	200	10.85	31.81	89.33	0.13	3.17	2.82	13617	0.98	8.49	1.085	3.181	8.933	0.013	0.317	0.282	1235	0.089	0.770
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	200	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.254	0.950	2.239	0.003	0.087	0.077	235	0.021	0.193
Loaders	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	2	5	200	0.69	3.53	4.56	0.01	0.38	0.34	517	0.06	0.43	0.069	0.353	0.456	0.001	0.038	0.034	47	0.006	0.039
Grader	DIESEL	162	0.1467	0.7345	1.1193	0.0014	0.0631	0.0562	124	0.0132	0.1063	1	5	200	0.73	3.67	5.60	0.01	0.32	0.28	620	0.07	0.53	0.073	0.367	0.560	0.001	0.032	0.028	56	0.006	0.048
Subtotal															**14.82**	**48.52**	**121.88**	**0.17**	**4.73**	**4.21**	**17346**	**1.34**	**11.58**	**1.48**	**4.85**	**12.19**	**0.02**	**0.47**	**0.42**	**1574**	**0.12**	**1.05**
HDPE Submain, Laterals, and Risers Installation																																
Tractor	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	2	5	390	0.69	3.53	4.56	0.01	0.38	0.34	517	0.06	0.43	0.135	0.688	0.890	0.001	0.075	0.066	92	0.011	0.077
Trencher	DIESEL	69	0.1281	0.4684	0.7862	0.0008	0.0669	0.0595	64.9	0.0116	0.0747	2	4	390	1.02	3.75	6.29	0.01	0.53	0.48	519	0.09	0.60	0.200	0.731	1.227	0.001	0.104	0.093	92	0.016	0.106
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	390	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.496	1.853	4.366	0.005	0.169	0.151	459	0.041	0.376
Scraper	DIESEL	356	0.3186	1.2113	2.8288	0.0032	0.1099	0.0978	321	0.0287	0.2687	2	5	390	3.19	12.11	28.29	0.03	1.10	0.98	3214	0.29	2.69	0.621	2.362	5.516	0.006	0.214	0.191	569	0.051	0.475
HDPE Fusing Machine (Generator)	DIESEL	84	0.1106	0.4905	0.7587	0.0009	0.0590	0.0525	77.9	0.0100	0.0721	2	8	390	1.77	7.85	12.14	0.01	0.94	0.84	1247	0.16	1.15	0.345	1.530	2.367	0.003	0.184	0.164	221	0.028	0.204
Quads	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	2	2	390	1.63	2.55	0.00	0.01	0.02	0.02	5	0.10	0.00	0.318	0.497	0.000	0.001	0.004	0.003	1	0.018	0.000
Diesel Generator (50 hp)	DIESEL	50	0.0872	0.2639	0.2847	0.0004	0.0234	0.0208	30.6	0.0079	0.0270	2	8	390	1.40	4.22	4.55	0.01	0.37	0.33	490	0.13	0.43	0.272	0.823	0.888	0.001	0.073	0.065	87	0.022	0.077
Subtotal															**12.24**	**43.51**	**78.23**	**0.10**	**4.22**	**3.76**	**8586**	**1.06**	**7.43**	**2.39**	**8.48**	**15.25**	**0.02**	**0.82**	**0.73**	**1519**	**0.19**	**1.31**
Flushing and Testing																																
Quads	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	2	2	60	1.63	2.55	0.00	0.01	0.02	0.02	5	0.10	0.00	0.049	0.076	0.000	0.000	0.001	0.001	0	0.003	0.000
Subtotal															**1.63**	**2.55**	**0.00**	**0.01**	**0.02**	**0.02**	**5**	**0.10**	**0.00**	**0.05**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0.00**	**0.00**
Seeding and Planting																																
Seeding Machine	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	1	8	200	3.26	5.10	0.00	0.01	0.04	0.04	11	0.20	0.00	0.326	0.510	0.000	0.001	0.004	0.004	1	0.018	0.000
Subtotal															**3.26**	**5.10**	**0.00**	**0.01**	**0.04**	**0.04**	**11**	**0.20**	**0.00**	**0.33**	**0.51**	**0.00**	**0.00**	**0.00**	**0.00**	**1**	**0.02**	**0.00**
Gravel Installation																																
Staging Area Preparation																																
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	3	5	25	3.81	14.26	33.58	0.04	1.30	1.16	3888	0.34	3.19	0.048	0.178	0.420	0.000	0.016	0.014	44	0.004	0.036
Subtotal															**3.81**	**14.26**	**33.58**	**0.04**	**1.30**	**1.16**	**3888**	**0.34**	**3.19**	**0.05**	**0.18**	**0.42**	**0.00**	**0.02**	**0.01**	**44**	**0.00**	**0.04**
Access Roadways																																
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	80	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.102	0.380	0.896	0.001	0.035	0.031	94	0.008	0.077
Scraper	DIESEL	356	0.3186	1.2113	2.8288	0.0032	0.1099	0.0978	321	0.0287	0.2687	1	5	80	1.59	6.06	14.14	0.02	0.55	0.49	1607	0.14	1.34	0.064	0.242	0.566	0.001	0.022	0.020	58	0.005	0.049
Subtotal															**4.14**	**15.56**	**36.53**	**0.04**	**1.42**	**1.26**	**4199**	**0.37**	**3.47**	**0.17**	**0.62**	**1.46**	**0.00**	**0.06**	**0.05**	**152**	**0.01**	**0.13**
Gravel Delivery to Stockpile																																
Dump Truck (see truck mileage)	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	25	1	150	5.42	15.90	44.66	0.07	1.58	1.41	6808	0.49	4.24	0.407	1.193	3.350	0.005	0.119	0.106	463	0.033	0.289
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	3	5	150	3.81	14.26	33.58	0.04	1.30	1.16	3888	0.34	3.19	0.286	1.069	2.519	0.003	0.098	0.087	265	0.023	0.217
Loaders	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	7	5	150	2.43	12.35	15.98	0.02	1.34	1.19	1810	0.22	1.52	0.182	0.926	1.198	0.002	0.101	0.089	123	0.015	0.103
Subtotal															**11.67**	**42.51**	**94.22**	**0.13**	**4.23**	**3.76**	**12507**	**1.05**	**8.95**	**0.88**	**3.19**	**7.07**	**0.01**	**0.32**	**0.28**	**851**	**0.07**	**0.61**
Gravel Delivery from Stockpile to DCM Area																																
Dump Trucks (see truck mileage)	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	30	1	150	6.51	19.09	53.60	0.08	1.90	1.69	8170	0.59	5.09	0.488	1.431	4.020	0.006	0.143	0.127	556	0.040	0.346
Subtotal															**6.51**	**19.09**	**53.60**	**0.08**	**1.90**	**1.69**	**8170**	**0.59**	**5.09**	**0.49**	**1.43**	**4.02**	**0.01**	**0.14**	**0.13**	**556**	**0.04**	**0.35**
Geotextile and Gravel Application																																
Backhoe/tractor/dozer	DIESEL	90	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	2	5	150	0.69	3.53	4.56	0.01	0.38	0.34	517	0.06	0.43	0.052	0.265	0.342	0.000	0.029	0.026	35	0.004	0.030
D6 Dozers	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	10	5	150	12.71	47.52	111.95	0.13	4.34	3.86	12961	1.15	10.63	0.953	3.564	8.396	0.010	0.326	0.290	882	0.078	0.724
Subtotal															**13.41**	**51.05**	**116.51**	**0.13**	**4.73**	**4.21**	**13479**	**1.21**	**11.07**	**1.01**	**3.83**	**8.74**	**0.01**	**0.35**	**0.32**	**917**	**0.08**	**0.75**
For Gravel Cover and Other Phase 7a DCMs																																
Water Truck	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	5	5	390	3.50	9.59	30.93	0.05	1.03	0.92	4164	0.32	2.94	0.682	1.870	6.032	0.009	0.201	0.179	737	0.056	0.520
Fuel Trucks	DIESEL	250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0367	167	0.0126	0.1175	3	5	390	2.10	5.75	18.56	0.03	0.62	0.55	2498	0.19	1.76	0.409	1.122	3.619	0.005	0.121	0.107	442	0.034	0.312
Subtotal															**5.60**	**15.35**	**49.49**	**0.07**	**1.65**	**1.47**	**6662**	**0.51**	**4.70**	**1.09**	**2.99**	**9.65**	**0.01**	**0.32**	**0.29**	**1178**	**0.09**	**0.83**
Tillage																																
Riprap Reinforcement of Existing Berm																																
Dump Truck	DIESEL	381	0.2170	0.6362	1.7865	0.0027	0.0634	0.0564	272	0.0196	0.1697	10	2	20	4.34	12.72	35.73	0.05	1.27	1.13	5447	0.39	3.39	0.043	0.127	0.357	0.001	0.013	0.011	49	0.004	0.031
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	2	5	20	2.54	9.50	22.39	0.03	0.87	0.77	2592	0.23	2.13	0.025	0.095	0.224	0.000	0.009	0.008	24	0.002	0.019
Loaders	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	2	5	20	0.69	3.53	4.56	0.01	0.38	0.34	517	0.06	0.43	0.007	0.035	0.046	0.000	0.004	0.003	5	0.001	0.004
Grader	DIESEL	162	0.1467	0.7345	1.1193	0.0014	0.0631	0.0562	124	0.0132	0.1063	1	5	20	0.73	3.67	5.60	0.01	0.32	0.28	620	0.07	0.53	0.007	0.037	0.056	0.000	0.003	0.003	6	0.001	0.005
Subtotal															**8.31**	**29.43**	**68.28**	**0.09**	**2.83**	**2.52**	**9176**	**0.75**	**6.49**	**0.08**	**0.29**	**0.68**	**0.00**	**0.03**	**0.03**	**83**	**0.01**	**0.06**
HDPE Laterals and Risers Installation																																
Tractor	DIESEL	75	0.0694	0.3529	0.4565	0.0006	0.0383	0.0341	51.7	0.0063	0.0434	1	5	390	0.35	1.76	2.28	0.00	0.19	0.17	259	0.03	0.22	0.068	0.344	0.445	0.001	0.037	0.033	46	0.006	0.038
Trencher	DIESEL	69	0.1281	0.4684	0.7862	0.0008	0.0669	0.0595	64.9	0.0116	0.0747	1	8	390	1.02	3.75	6.29	0.01	0.53	0.48	519	0.09	0.60	0.200	0.731	1.227	0.001	0.104	0.093	92	0.016	0.106
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	1	5	390	1.27	4.75	11.19	0.01	0.43	0.39	1296	0.11	1.06	0.248	0.927	2.183	0.002	0.085	0.075	229	0.020	0.188
Scraper	DIESEL	356	0.3186	1.2113	2.8288	0.0032	0.1099	0.0978	321	0.0287	0.2687	1	5	390	1.59	6.06	14.14	0.02	0.55	0.49	1607	0.14	1.34	0.311	1.181	2.758	0.003	0.107	0.095	284	0.025	0.238
HDPE Fusing Machine (Generator)	DIESEL	84	0.1106	0.4905	0.7587	0.0009	0.0590	0.0525	77.9	0.0100	0.0721	1	5	390	0.55	2.45	3.79	0.00	0.30	0.26	390	0.05	0.36	0.108	0.478	0.740	0.001	0.058	0.051	69	0.009	0.064
Quads	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	1	8	390	3.26	5.10	0.00	0.01	0.04	0.04	11	0.20	0.00	0.636	0.994	0.000	0.002	0.008	0.007	2	0.036	0.001
Subtotal															**8.05**	**23.87**	**37.71**	**0.05**	**2.04**	**1.82**	**4082**	**0.63**	**3.59**	**1.57**	**4.65**	**7.35**	**0.01**	**0.40**	**0.35**	**722**	**0.11**	**0.63**
Flushing and Testing																																
Quads	DIESEL	50	0.4077	0.6371	0.0001	0.0013	0.0049	0.0044	1.3532	0.0253	0.0005	2	2	10	1.63	2.55	0.00	0.01	0.02	0.02	5	0.10	0.00	0.008	0.013	0.000	0.000	0.000	0.000	0	0.000	0.000
Subtotal															**1.63**	**2.55**	**0.00**	**0.01**	**0.02**	**0.02**	**5**	**0.10**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0**	**0.00**	**0.00**
Tillage																																
Dozer	DIESEL	358	0.2542	0.9504	2.2389	0.0025	0.0868	0.0773	259	0.0229	0.2127	6	5	40	7.63	28.51	67.17	0.08	2.61	2.32	7777	0.69	6.38	0.153	0.570	1.343	0.002	0.052	0.046	141	0.012	0.116
Subtotal															**7.63**	**28.51**	**67.17**	**0.08**	**2.61**	**2.32**	**7777**	**0.69**	**6.38**	**0.15**	**0.57**	**1.34**	**0.00**	**0.05**	**0.05**	**141**	**0.01**	**0.12**
TOTAL															**299.71**	**5746.85**	**1266.15**	**2.01**	**134.62**	**119.81**	**155683**	**22.64**	**126.27**	**28.81**	**396.65**	**133.54**	**0.20**	**11.17**	**9.94**	**12242**	**1.70**	**9.95**

Assumptions: SCAQMD Emission Factors, 2013
Horsepower ratings from URBEMIS defaults

Table D-3
Fugitive Dust Emission Calculations
Owens Lake Dust Control Measures - Phase 7a

Fugitive Dust Emissions by Activity

Assuming moisture content equivalent to watering 3 x daily
Control Efficiency: 61 percent

Grading	**Total Area to be Disturbed**	**Maximum Daily Grading**	**Emission Factor, lbs PM10/acre/ day**	**Emissions, lbs PM10/day**	**Emissions, lbs PM2.5/day**	**Emissions, lbs PM10/day**	**Emissions, lbs PM2.5/day**
Exploration	2560	200	20	4000	840	1560	327.6
						PM10 Emissions, tons/year	**PM2.5 Emissions, tons/year**
						195	40.95

Assume 200 acres of site to be disturbed per day during site preparation.
4 square miles total to be disturbed = 2,560 acres
256 acres/day could be disturbed
Most surfaces would be wet/flooded from seasonal rains.
For annual emissions, assume 10% of the time (25 days per year) the site would be undergoing disturbance.

Table D-4
Construction Worker Commute Emission Calculations
Owens Lake Dust Control Measures - Phase 7a

Construction Phase	Vehicle Class	No. of Workers Per Construction Phase	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	CO Start-Up (g/start)[a]	NO_X Running Exhaust (g/mi)	NO_X Start-Up (g/start)[a]	ROG Running Exhaust (g/mi)	ROG Start-Up (g/start)[a]	ROG Hot-Soak (g/trip)	ROG Resting Loss (g/hr)	ROG Running Evaporative (g/mi)	ROG Diurnal Evaporative (g/hr)	SOx Running Exhaust (g/mi)	SOx Start-Up (g/start)[a]	PM10 Running Exhaust (g/mi)	PM10 Start-Up (g/start)[a]	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Start-Up (g/start)[a]	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CO2 Start-Up (g/start)[a]	CH4 Running Exhaust (g/mi)	CH4 Start-Up (g/start)[a]	N2O Running Exhaust (g/mi)	N2O Start-Up (g/start)[a]
Shallow Flood Areas - Turnouts	Light-Duty Truck, catalyst	90	35	90	6.792	21.452	0.903	0.921	0.191	1.557	0.469	0.023	0.115	0.029	0.004	0.002	0.015	0.019	0.008	0.013	0.014	0.017	0.002	0.005	383.968	194.08	0.045	0.09	0.09	0.09
Shallow Flood Areas	Light-Duty Truck, catalyst	52	35	90	6.792	21.452	0.903	0.921	0.191	1.557	0.469	0.023	0.115	0.029	0.004	0.002	0.015	0.019	0.008	0.013	0.014	0.017	0.002	0.005	383.968	194.08	0.045	0.09	0.09	0.09
Managed Vegetation Areas	Light-Duty Truck, catalyst	65	35	90	6.792	21.452	0.903	0.921	0.191	1.557	0.469	0.023	0.115	0.029	0.004	0.002	0.015	0.019	0.008	0.013	0.014	0.017	0.002	0.005	383.968	194.08	0.045	0.09	0.09	0.09
Gravel	Light-Duty Truck, catalyst	141	35	90	6.792	21.452	0.903	0.921	0.191	1.557	0.469	0.023	0.115	0.029	0.004	0.002	0.015	0.019	0.008	0.013	0.014	0.017	0.002	0.005	383.968	194.08	0.045	0.09	0.09	0.09
Tillage	Light-Duty Truck, catalyst	57	35	90	6.792	21.452	0.903	0.921	0.191	1.557	0.469	0.023	0.115	0.029	0.004	0.002	0.015	0.019	0.008	0.013	0.014	0.017	0.002	0.005	383.968	194.08	0.045	0.09	0.09	0.09

Table D-4 Continued

Construction Phase	Vehicle Class	Emissions, lbs/day CO	NOx	VOCs	SOx	PM10	PM2.5	Paved Road Fugitive Dust PM10	Paved Road Fugitive Dust PM2.5	CO2	CH4	N2O	Construction Days	Total Emissions, tons CO	NOx	VOCs	SOx	PM10	PM2.5	Paved Road Fugitive Dust PM10	Paved Road Fugitive Dust PM2.5	CO2	CH4	N2O
Shallow Flood Areas - Turnouts	Light-Duty Truck, catalyst	129.80	16.49	5.27	0.07	0.65	0.38	0.79	0.17	6933.74	0.84	1.57	180	11.68	1.48	0.47451	6.50E-03	0.05854	0.03436	0.07153	0.01502	624	0.07554	0.14100
Shallow Flood Areas	Light-Duty Truck, catalyst	75.00	9.53	3.05	0.04	0.38	0.22	0.46	0.10	4006.16	0.48	0.91	180	6.75	0.86	0.27416	3.76E-03	0.03382	0.01985	0.04133	0.00868	361	0.04364	0.08146
Managed Vegetation Areas	Light-Duty Truck, catalyst	93.75	11.91	3.81	0.05	0.47	0.28	0.57	0.12	5007.70	0.61	1.13	250	11.72	1.49	0.47597	6.52E-03	0.05872	0.03446	0.07175	0.01507	626	0.07577	0.14143
Gravel	Light-Duty Truck, catalyst	203.36	25.84	8.26	0.11	1.02	0.60	1.25	0.26	10862.86	1.31	2.45	250	25.42	3.23	1.03250	1.41E-02	0.12737	0.07476	0.15565	0.03269	1358	0.16436	0.30680
Tillage	Light-Duty Truck, catalyst	82.21	10.44	3.34	0.05	0.41	0.24	0.50	0.11	4391.37	0.53	0.99	250	10.28	1.31	0.41739	5.72E-03	0.05149	0.03022	0.06292	0.01321	549	0.06644	0.12402
		584.11	**74.21**	**23.73**	**0.33**	**2.93**	**1.72**	**3.58**	**0.75**	**31201.83**	**3.78**	**7.05**		**65.85**	**8.37**	**2.67**	**0.04**	**0.33**	**0.19**	**0.40**	**0.08**	**3190.90**	**0.39**	**0.72**

Paved Road Fugitive Dust
EPA's AP-42, Section 13.2.1, November 2006
E = k(sL/2)^0.65 x (W/3)^1.5 - C
For light-duty trucks assume 2 tons/vehicle
Assume silt loading for 10,000 ADT roadways = 0.03 g/m3
Assume k = 0.016 PM10
Assume 6 miles in addition for track-out for PM10
Emission Factors
PM10 9.81231E-05

Unpaved Road Fugitive Dust
EPA's AP-42, Section 13.2.2
Industrial Roads
E = k (s/12)^a x (W/3)^b
Assume 61% control efficiency for watering 3 x daily
For light-duty trucks assume 2 tons/vehicle
k = 1.5 for PM10, 0.15 for PM2.5
s = 8.5, a = 0.9, b = 0.45
Emission Factors
PM10 0.357378738
PM2.5 0.035737874

Emission Factors from EMFAC2007 Model, assuming 2012 composite emission factors.
Assume startup after 8 hours
Assume 45 minutes run time total

Table D-5
Construction Truck Trip Emissions
Owens Lake Dust Control Measures - Phase 7a

Construction Phase	Vehicle Class	No. of Trucks per day	Speed (mph)	VMT (mi/vehicle-day)	CO Running Exhaust (g/mi)	NO_X Running Exhaust (g/mi)	ROG Running Exhaust (g/mi)	SOx Running Exhaust (g/mi)	PM10 Running Exhaust (g/mi)	PM10 Tire Wear (g/mi)	PM10 Brake Wear (g/mi)	PM2.5 Running Exhaust (g/mi)	PM2.5 Tire Wear (g/mi)	PM2.5 Brake Wear (g/mi)	CO2 Running Exhaust (g/mi)	CH4 Running Exhaust (g/mi)	N2O Running Exhaust (g/mi)
All																	
Flatbed Truck - All Deliveries	Heavy Duty Truck, Diesel	1	20	80	4.108	13.313	0.863	0.018	0.431	0.036	0.028	0.359	0.009	0.012	1924.234	0.033	1.26
Fuel and Water Trucks - All Activities	Medium Duty Truck, Diesel	8	20	80	1.492	4.979	0.164	0.014	0.209	0.012	0.013	0.169	0.003	0.005	1505.00	0.007	0.47
Light Duty Trucks - All Activities	Light Duty Truck, Diesel	40	20	80	1.492	4.979	0.164	0.014	0.209	0.012	0.013	0.169	0.003	0.005	1505.00	0.007	0.47

Table D-5 Continued

Construction Phase	Vehicle Class	Emissions, lbs/day: CO	NOx	VOCs	SOx	PM10	PM2.5	Paved Road Fugitive Dust PM10	Paved Road Fugitive Dust PM2.5	CO2	CH4	N2O	Construction Days
All													
Flatbed Truck - All Deliveries	Heavy Duty Truck, Diesel	0.72	2.35	0.15	0.00	0.09	0.07	1.40	0.29	339	0.01	0.22	390
Fuel and Water Trucks - All Activities	Medium Duty Truck, Diesel	2.11	7.03	0.23	0.02	0.33	0.25	11.20	2.35	2124	0.01	0.67	390
Light Duty Trucks - All Activities	Light Duty Truck, Diesel	10.53	35.13	1.16	0.10	1.65	1.25	55.99	11.76	10618	0.05	3.34	390
		13.36	**44.50**	**1.54**	**0.12**	**2.07**	**1.57**	**68.58**	**14.40**	**13080**	**0.07**	**4.23**	**1170.00**

Construction Phase	Vehicle Class	Total Emissions, tons: CO	NOx	VOCs	SOx	PM10	PM2.5	Paved Road Fugitive Dust PM10	Paved Road Fugitive Dust PM2.5	CO2	CH4	N2O
All												
Flatbed Truck - All Deliveries	Heavy Duty Truck, Diesel	0.14	0.46	0.02968	6.19E-04	0.01702	0.01307	0.27293	0.05732	66	0.00113	0.04350
Fuel and Water Trucks - All Activities	Medium Duty Truck, Diesel	0.41	1.37	0.04512	3.85E-03	0.06438	0.04870	2.18345	0.45853	414	0.00193	0.13014
Light Duty Trucks - All Activities	Light Duty Truck, Diesel	2.05	6.85	0.22561	1.93E-02	0.32191	0.24350	10.91727	2.29263	2070	0.00963	0.65071
		2.60	**8.68**	**0.30**	**0.02**	**0.40**	**0.31**	**13.37**	**2.81**	**2313.96**	**0.01**	**0.75**

Emission Factors from EMFAC2007 Model, assuming 2015 composite emission factors.
Assume startup after 8 hours
Assume 45 minutes run time total

Assume 45 minutes run time total
2012 Emission Factors from EMFAC2007,
average temp 60F; Great Basin

Paved Road Fugitive Dust
EPA's AP-42, Section 13.2.1, November 2006
E = k(sL/2)^0.65 x (W/3)^1.5 - C
For LDT assume 2 tons/vehicle, MDT assume 13 tons/vehicle, HDT assume 20 tons/vehicle
Assume silt loading for 10,000 ADT roadways = 0.03 g/m3
Assume k = 0.016 PM10
Assume 6 miles in addition for track-out for PM10
Emission Factors

PM10, LDT	9.81231E-05
PM10, MDT	0.008944829
PM10, HDT	0.017495628

Unpaved Road Fugitive Dust
EPA's AP-42, Section 13.2.2
Industrial Roads
E = k (s/12)^a x (W/3)^b
For LDT assume 2 tons/vehicle, MDT assume 13 tons/vehicle, HDT assume 20 tons/vehicle

k = 1.5 for PM10, 0.15 for PM2.5
s = 8.5, a = 0.9, b = 0.45
Assume 61% control efficiency for watering 3x daily
Emission Factors

PM10, LDT	0.357379
PM10, MDT	0.829736
PM10, HDT	1.00723
PM2.5, LDT	0.035738
PM2.5, MDT	0.082974
PM2.5, HDT	0.100723

Assume 6 miles each way of unpaved road travel

Table D-6
Operational Vehicle Emission Calculations
Owens Lake Dust Control Measures - Phase 7a

		No. of Workers	Speed	VMT	CO		NO_X		ROG						SOx		PM10				PM2.5				CO2		CH4		N2O	
Operations	Vehicle Class		(mph)	(mi/vehicle-day)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]	Running Exhaust (g/mi)	Start-Up (g/start)[a]
Workers	Light-Duty Truck, Catalyst	30	35	90	6.792	21.452	0.903	0.921	0.191	1.557	0.469	0.023	0.115	0.029	0.004	0.002	0.015	0.019	0.008	0.013	0.014	0.017	0.002	0.005	383.968	194.08	0.045	0.09	0.09	0.09

Table D-6 Continued

		Emissions, lbs/day												Total Emissions, tons										
Operations	Vehicle Class	CO	NOx	VOCs	SOx	PM10	PM2.5	Paved Road Fugitive Dust PM10	Paved Road Fugitive Dust PM2.5	CO2	CH4	N2O	Work Days	CO	NOx	VOCs	SOx	PM10	PM2.5	Paved Road Fugitive Dust PM10	Paved Road Fugitive Dust PM2.5	CO2	CH4	N2O
Workers	Light-Duty Truck, Catalyst	43.27	5.50	1.76	0.02	0.22	0.13	0.26	0.06	2311.25	0.28	0.52	250	5.41	0.69	0.21968	3.01E-03	0.02710	0.01591	0.03312	0.00695	289	0.03497	0.06528
		43.27	**5.50**	**1.76**	**0.02**	**0.22**	**0.13**	**0.26**	**0.06**	**2311.25**	**0.28**	**0.52**		**5.41**	**0.69**	**0.22**	**0.00**	**0.03**	**0.02**	**0.03**	**0.01**	**288.91**	**0.03**	**0.07**

Paved Road Fugitive Dust
EPA's AP-42, Section 13.2.1, November 2006
E = k(sL/2)^0.65 x (W/3)^1.5 - C
For light-duty trucks assume 2 tons/vehicle
Assume silt loading for 10,000 ADT roadways = 0.03 g/m3
Assume k = 0.016 PM10
Assume 6 miles in addition for track-out for PM10
Emission Factors
PM10 9.81231E-05

Unpaved Road Fugitive Dust
EPA's AP-42, Section 13.2.2
Industrial Roads
E = k (s/12)^a x (W/3)^b
Assume 61% control efficiency for watering 3 x daily
For light-duty trucks assume 2 tons/vehicle
k = 1.5 for PM10, 0.15 for PM2.5
s = 8.5, a = 0.9, b = 0.45
Emission Factors
PM10 0.357378738
PM2.5 0.035737874

Emission Factors from EMFAC2007 Model, assuming 2012 composite emission factors.
Assume startup after 8 hours
Assume 45 minutes run time total

Table D-7
Summary of Emission Calculations
Owens Lake Dust Control Measures - Phase 7a

Total Emissions - Construction Phase

Source	ROG lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	PM10 lbs/day	PM2.5 lbs/day	CO2 lbs/day	CH4 lbs/day	N2O lbs/day	ROG tons (total)	CO tons (total)	NOX tons (total)	SOX tons (total)	PM10 tons (total)	PM2.5 tons (total)	CO2 tons (total)	CH4 tons (total)	N2O tons (total)
Offroad Equipment	299.71	5746.85	1266.15	2.01	134.62	119.81	155683	22.64	126.27	28.81	396.65	133.54	0.20	11.17	9.94	12242	1.70	9.95
Worker Trips	23.73	584.11	74.21	0.33	6.50	2.47	31202	3.78	7.05	2.67	65.85	8.37	0.04	0.73	0.28	3191	0.39	0.72
Construction Trucks	1.54	13.36	44.50	0.12	70.65	15.97	13080	0.07	4.23	0.30	2.60	8.68	0.02	13.78	3.11	2314	0.01	0.75
Fugitive Dust					1560	327.6								195	40.95			
Total	**324.98**	**6344.31**	**1384.86**	**2.46**	**1771.77**	**465.85**	**199965**	**26.48**	**137.54**	**31.79**	**465.10**	**150.59**	**0.26**	**220.68**	**54.28**	**17747**	**2.10**	**11.42**

Total Emissions - Operational Phase - GHGs

Source	CO2 tons (total)	CH4 tons (total)	N2O tons (total)
Offroad Equipment	74	0.01	0.05
Worker Trips	316	0.04	0.07
Construction Trucks	51	0.00	0.02
Total	**441**	**0.04**	**0.14**

Appendix E

Phase 7a Project Vegetation Conditions

Source: LADWP, 2011

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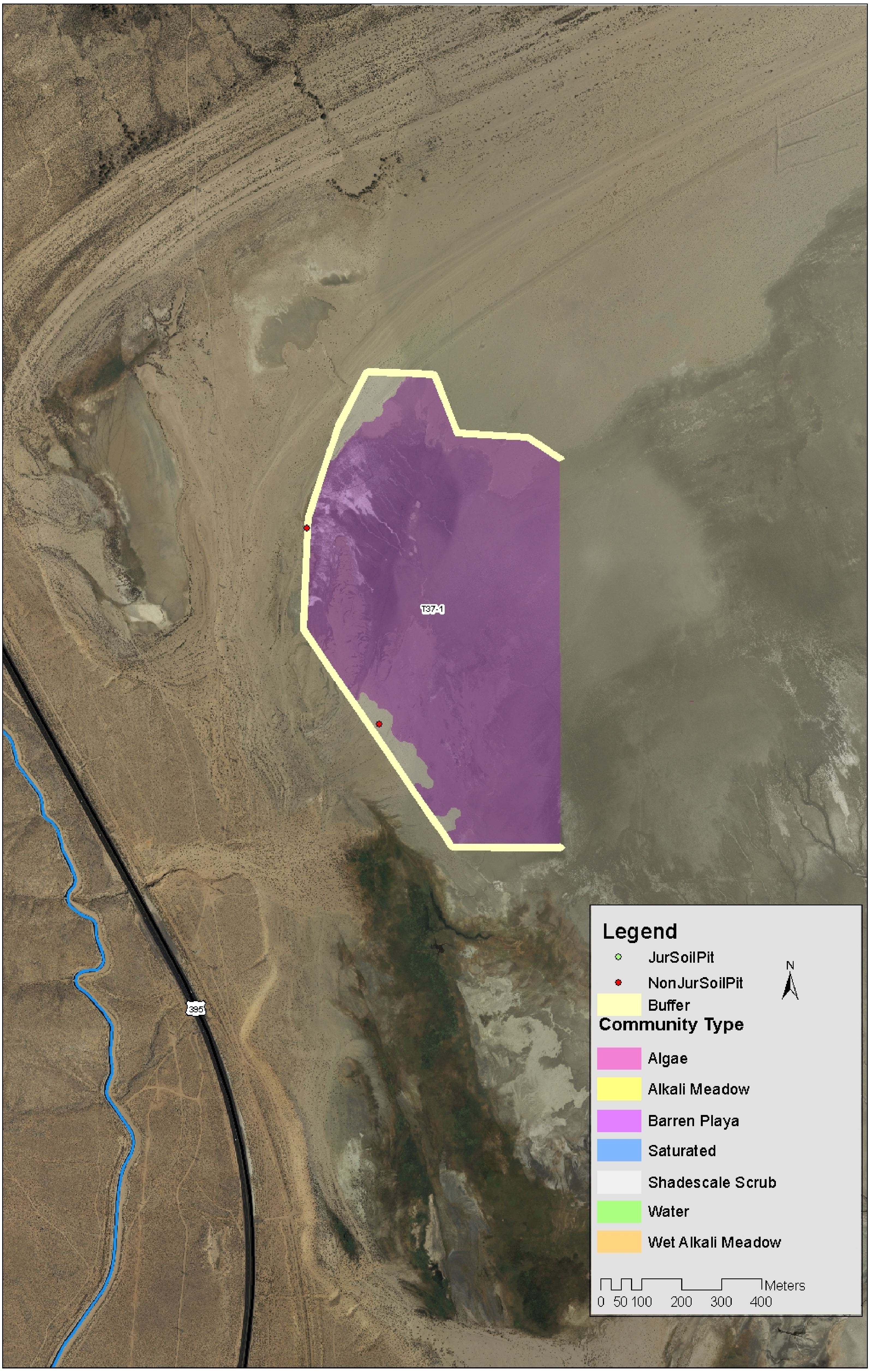
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Saturated
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Water
Wet Alkali Meadow
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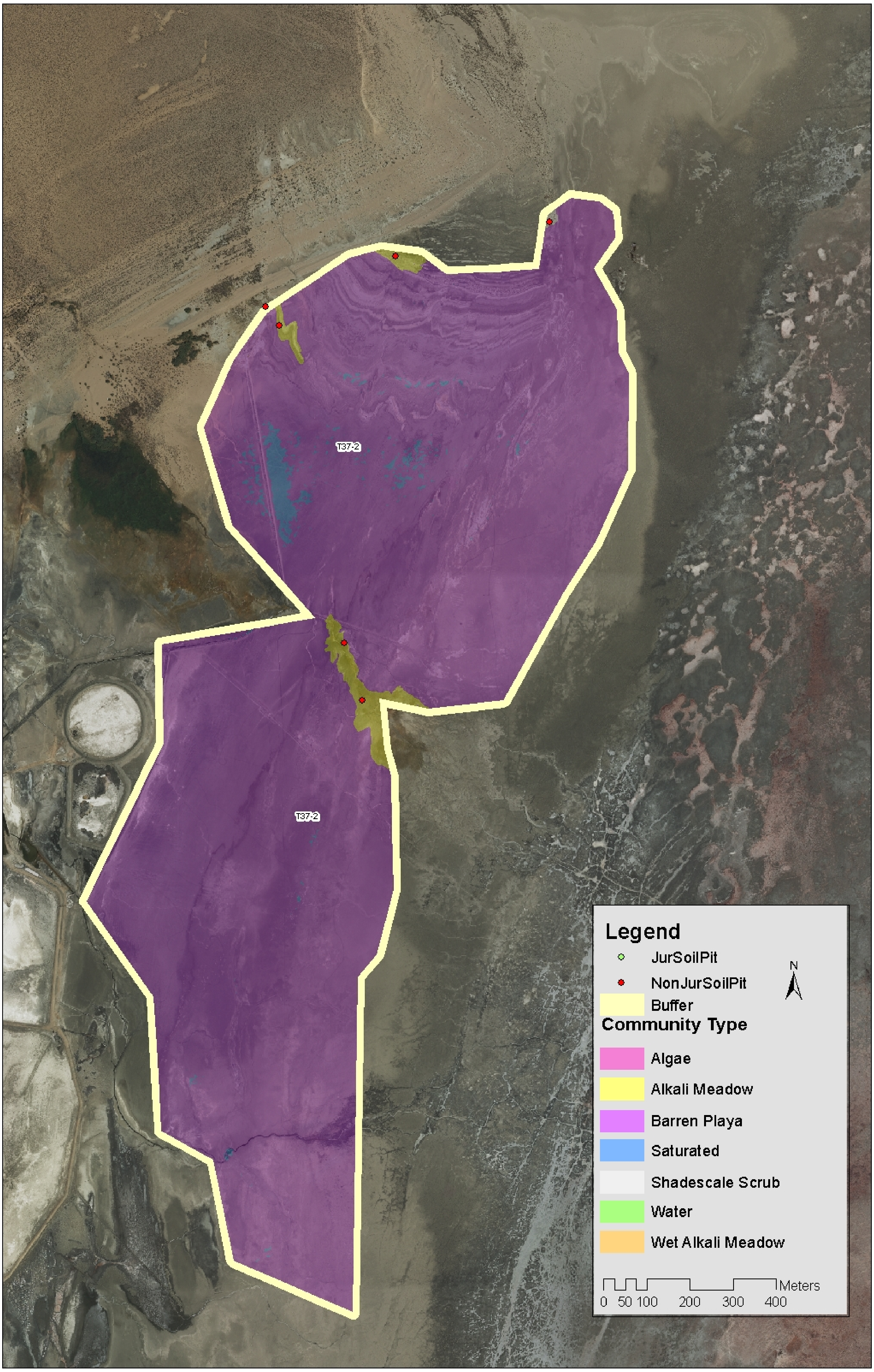
Meters

T37-2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Meters

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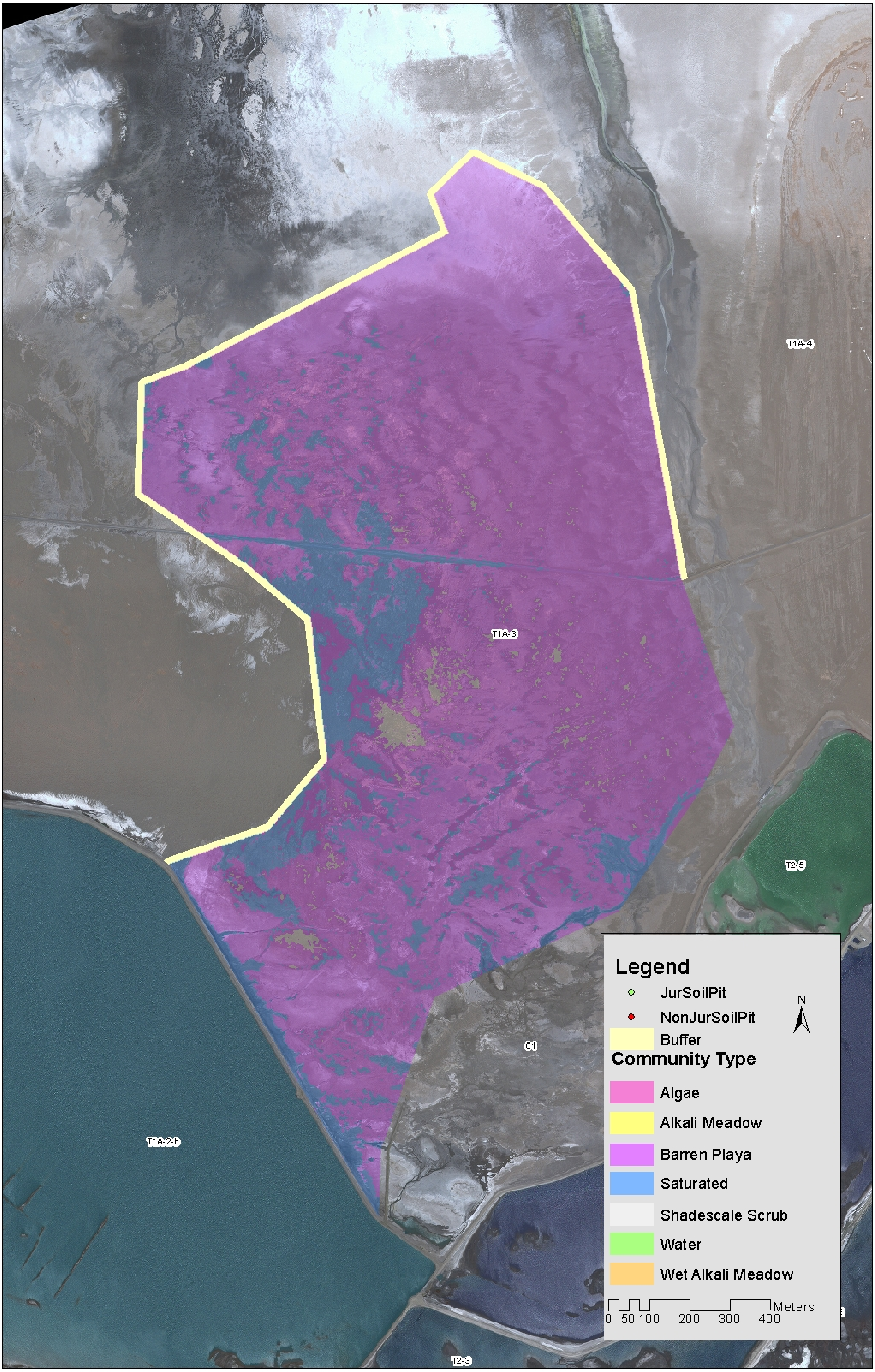

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Buffer
Community Type
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Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
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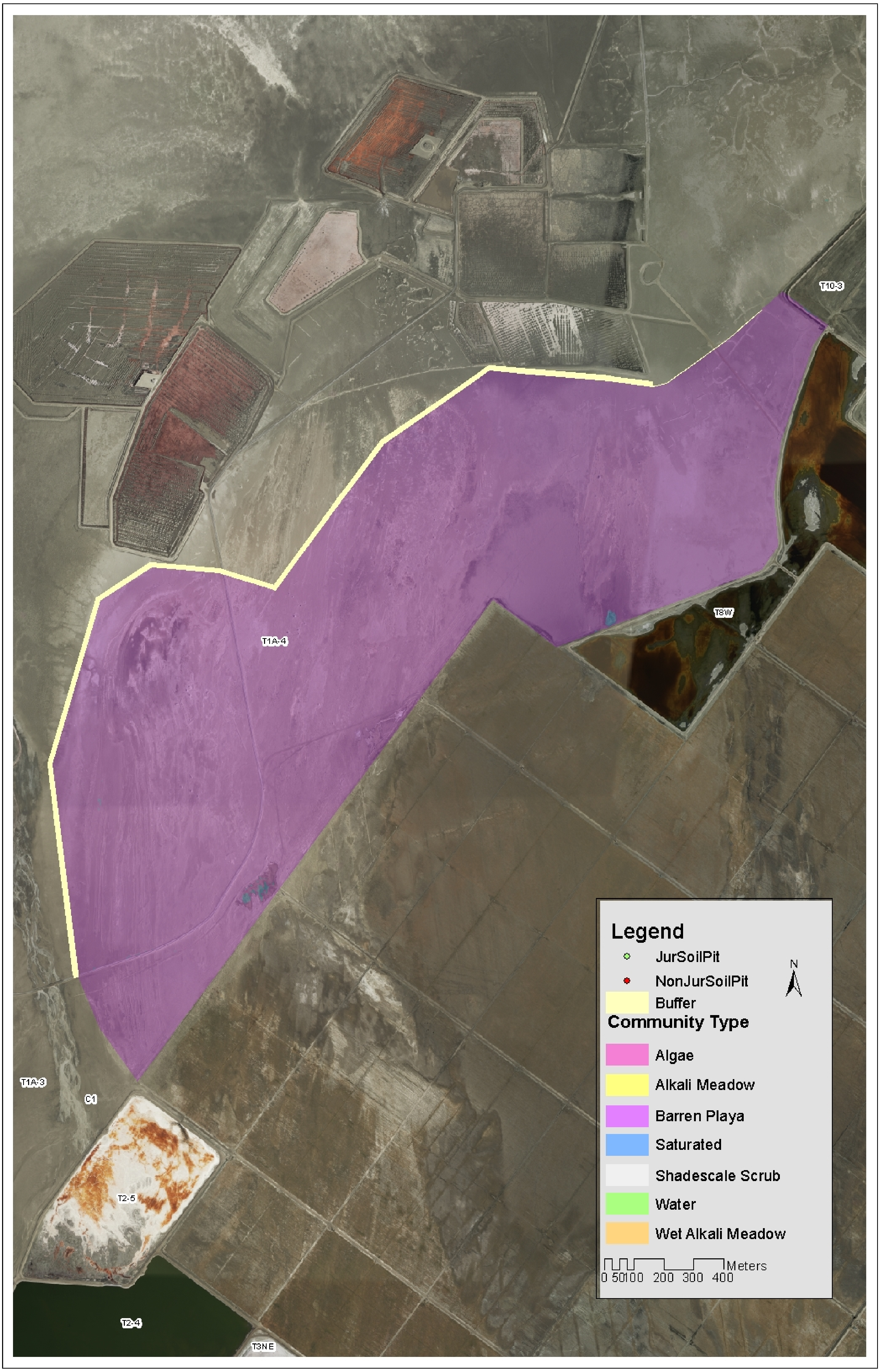
Meters

T1A-4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Buffer
Community Type
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Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
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Meters

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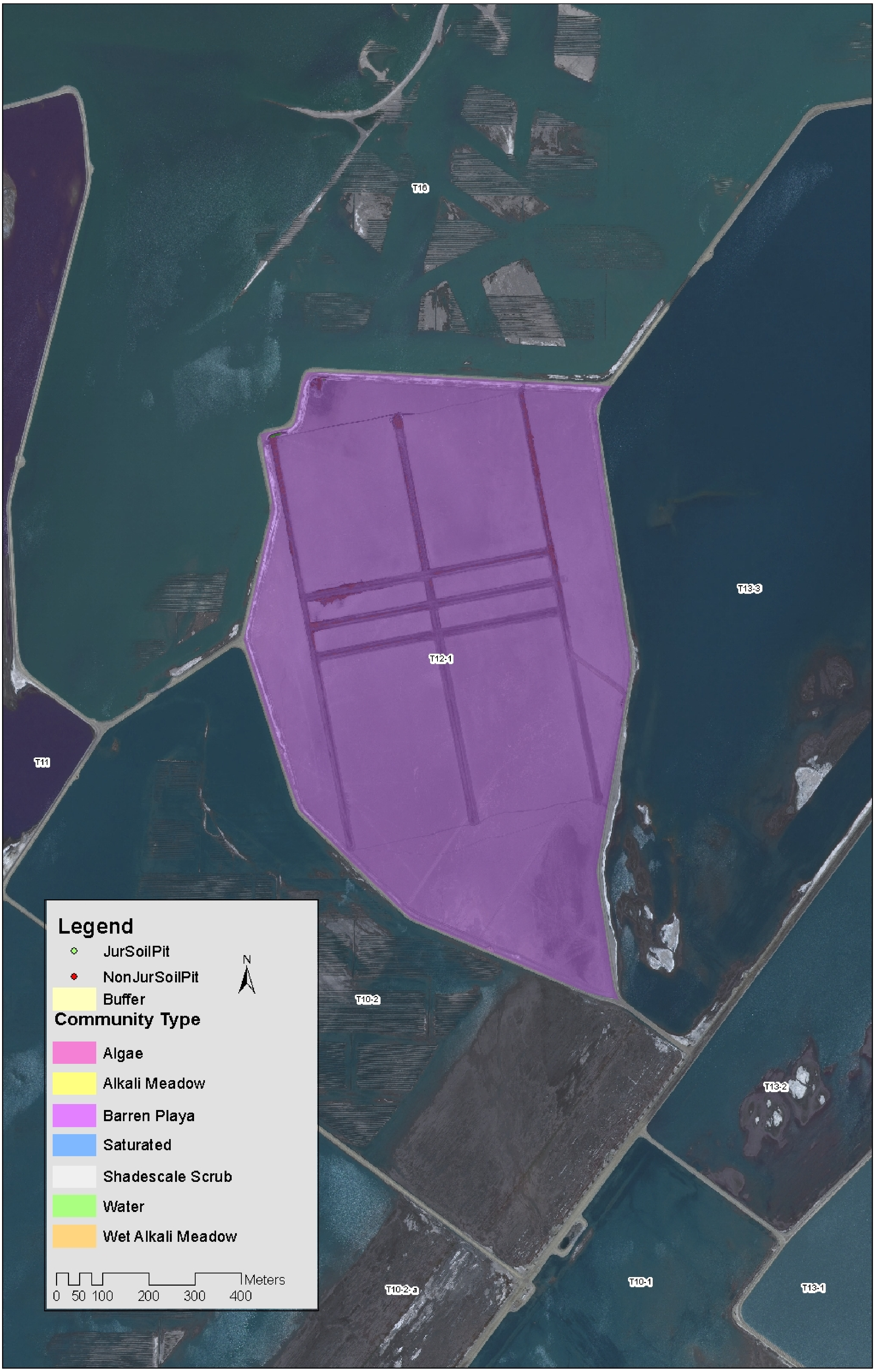

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NonJurSoilPit
Buffer
Community Type
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Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
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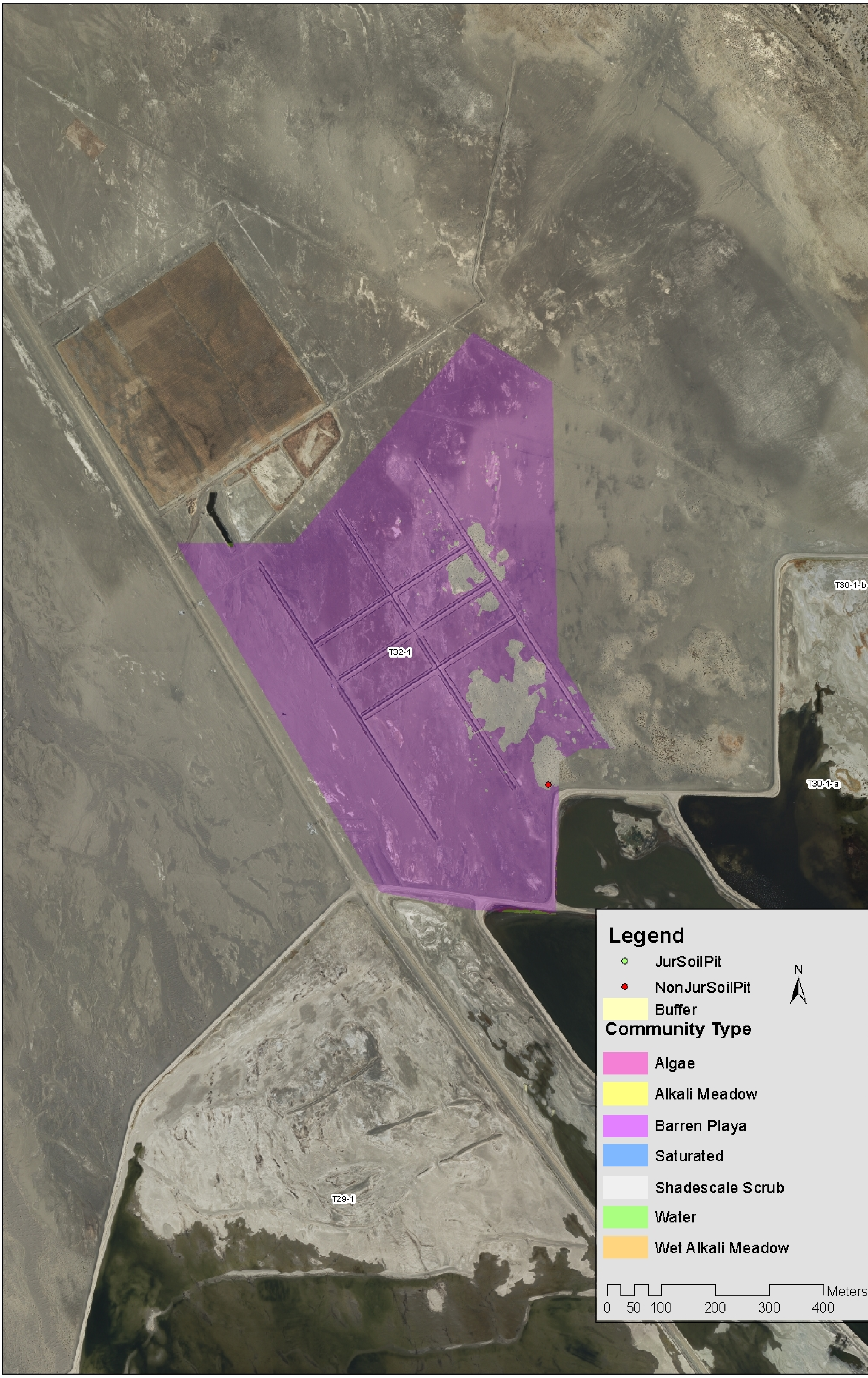
Meters

T32-1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Community Type
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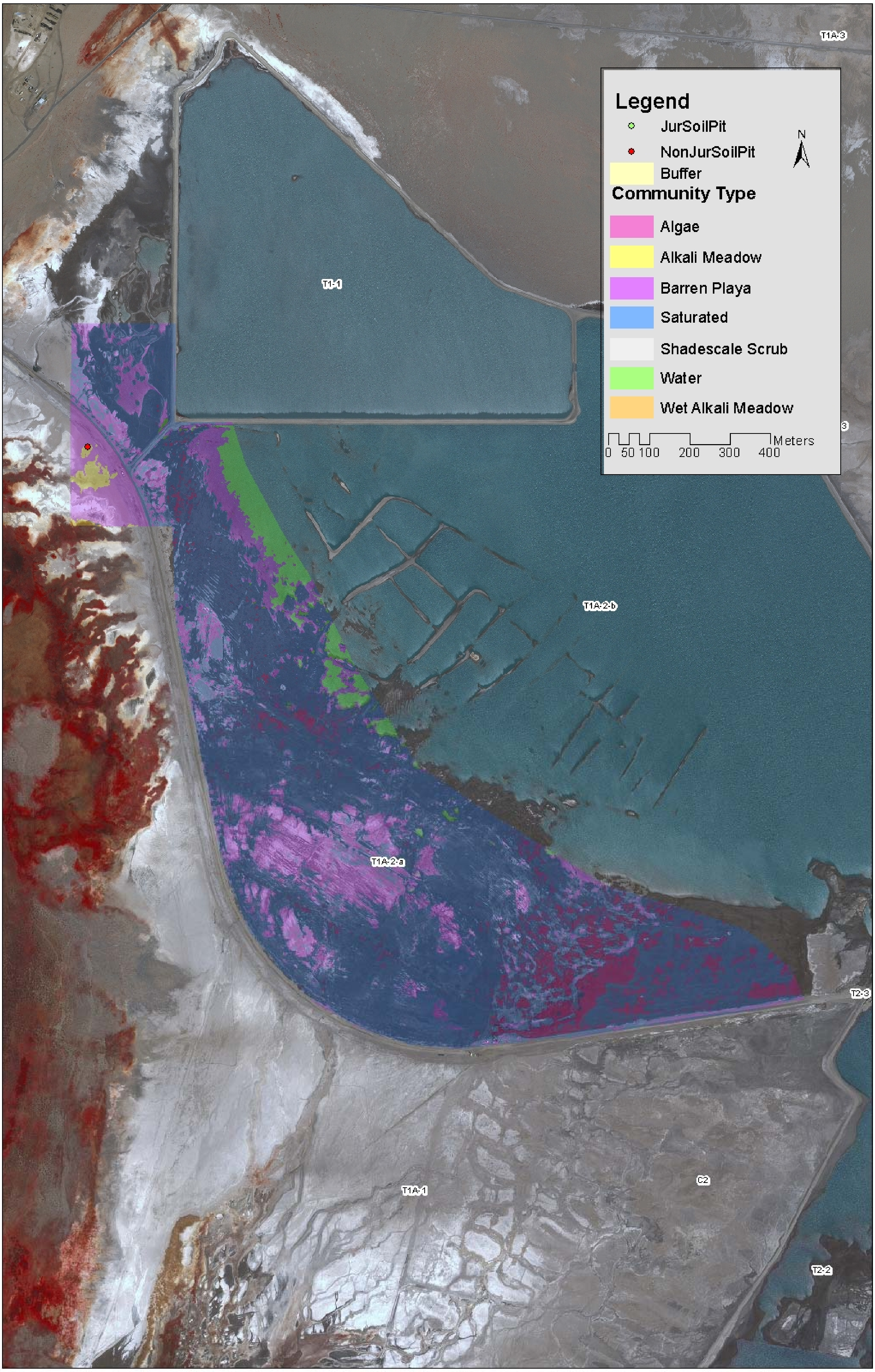
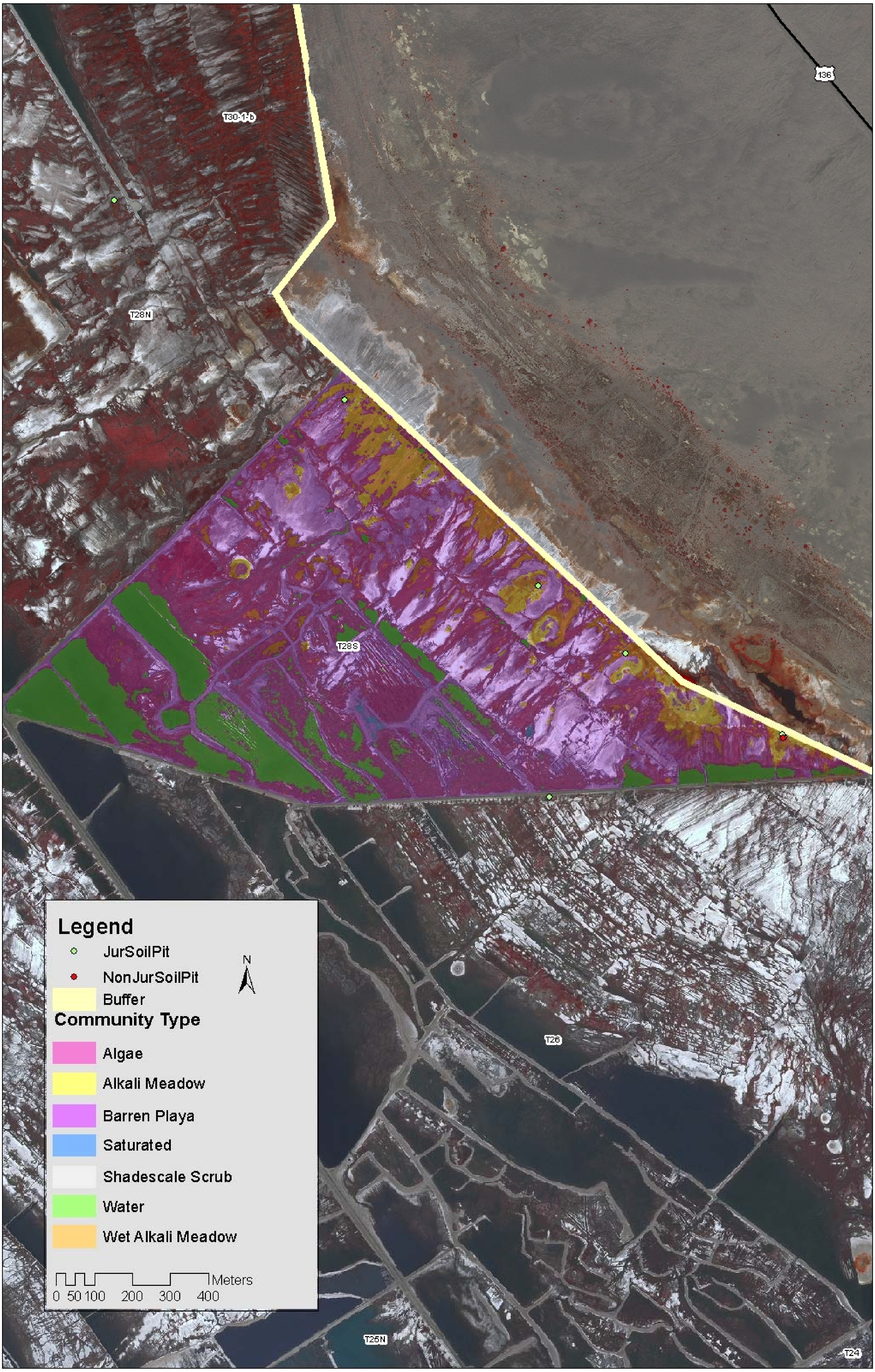
Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
N
0 50 100 200 300 400
Meters

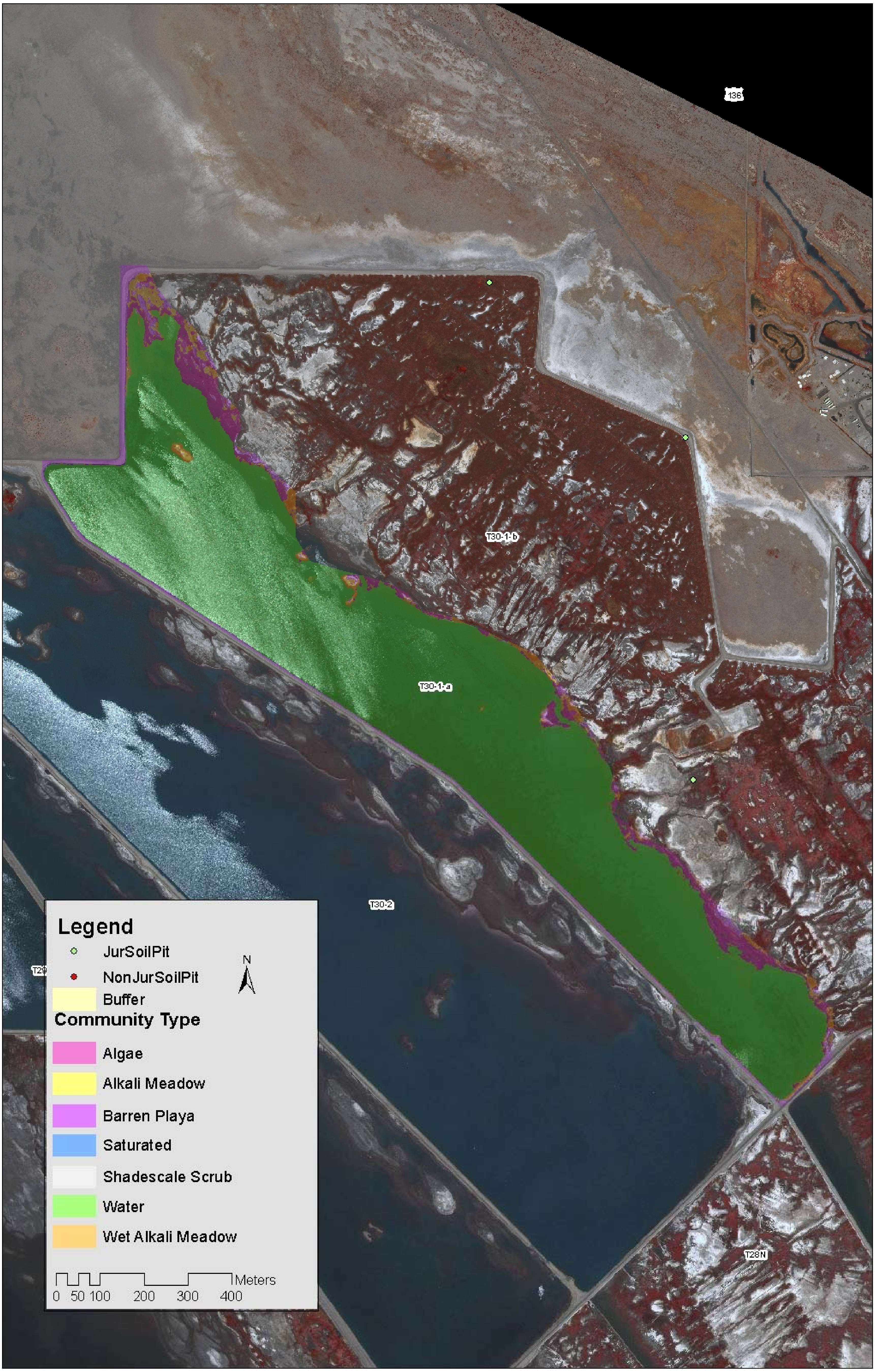
T1A-2_a


Legend
JurSoilPit
NonJurSoilPit
Buffer
Community Type
Algae
Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
N
0 50 100 200 300 400
Meters
T1A-3
T1-1
T1A-2-b
T1A-2-a
T2-3
T1A-1
C2
T2-2

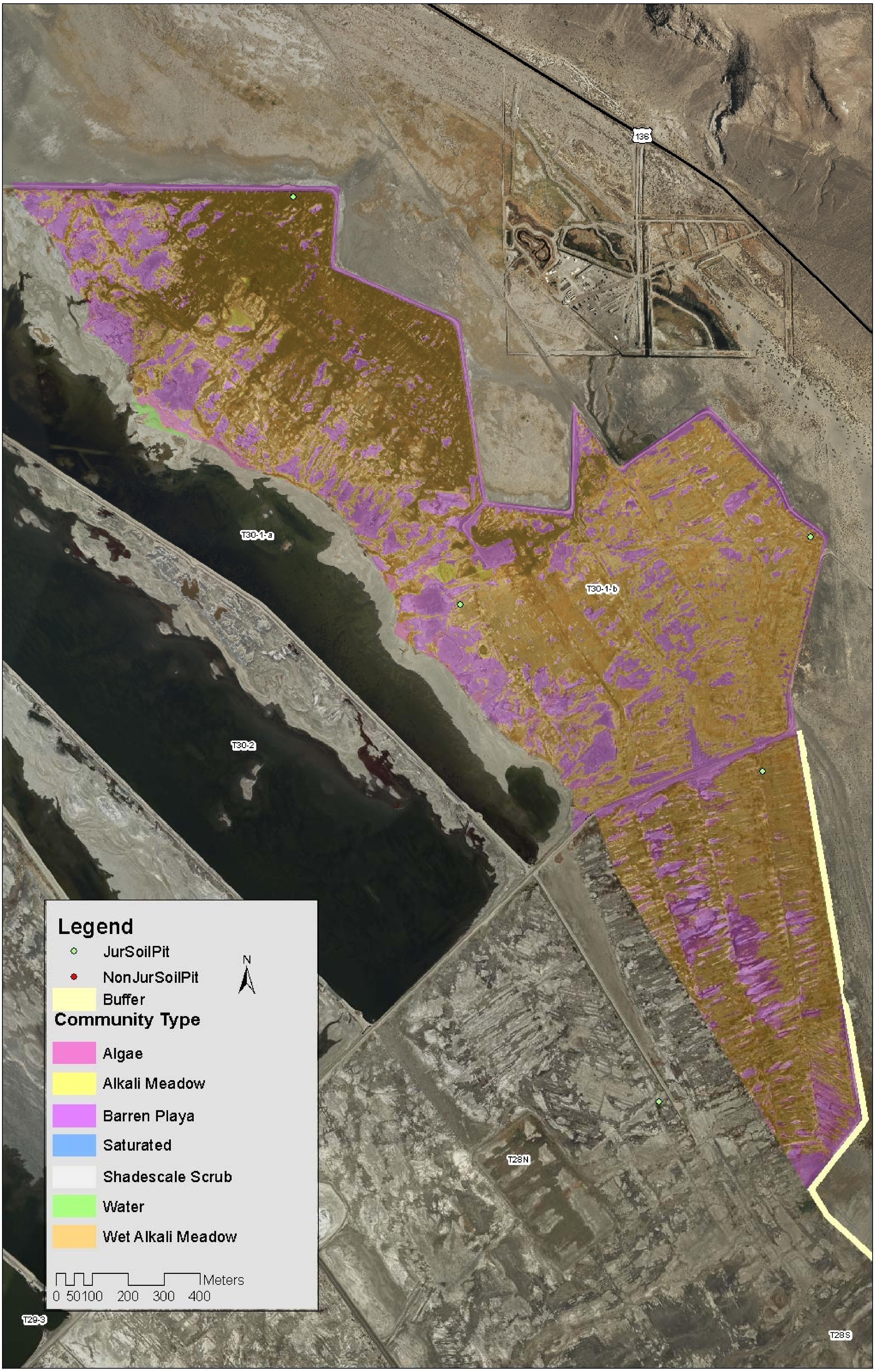
T28S


T30-1-b
T28N
T28S
136
T26
T25N
T24
Legend
JurSoilPit
NonJurSoilPit
Buffer
Community Type
Algae
Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
N
Meters
0 50 100 200 300 400

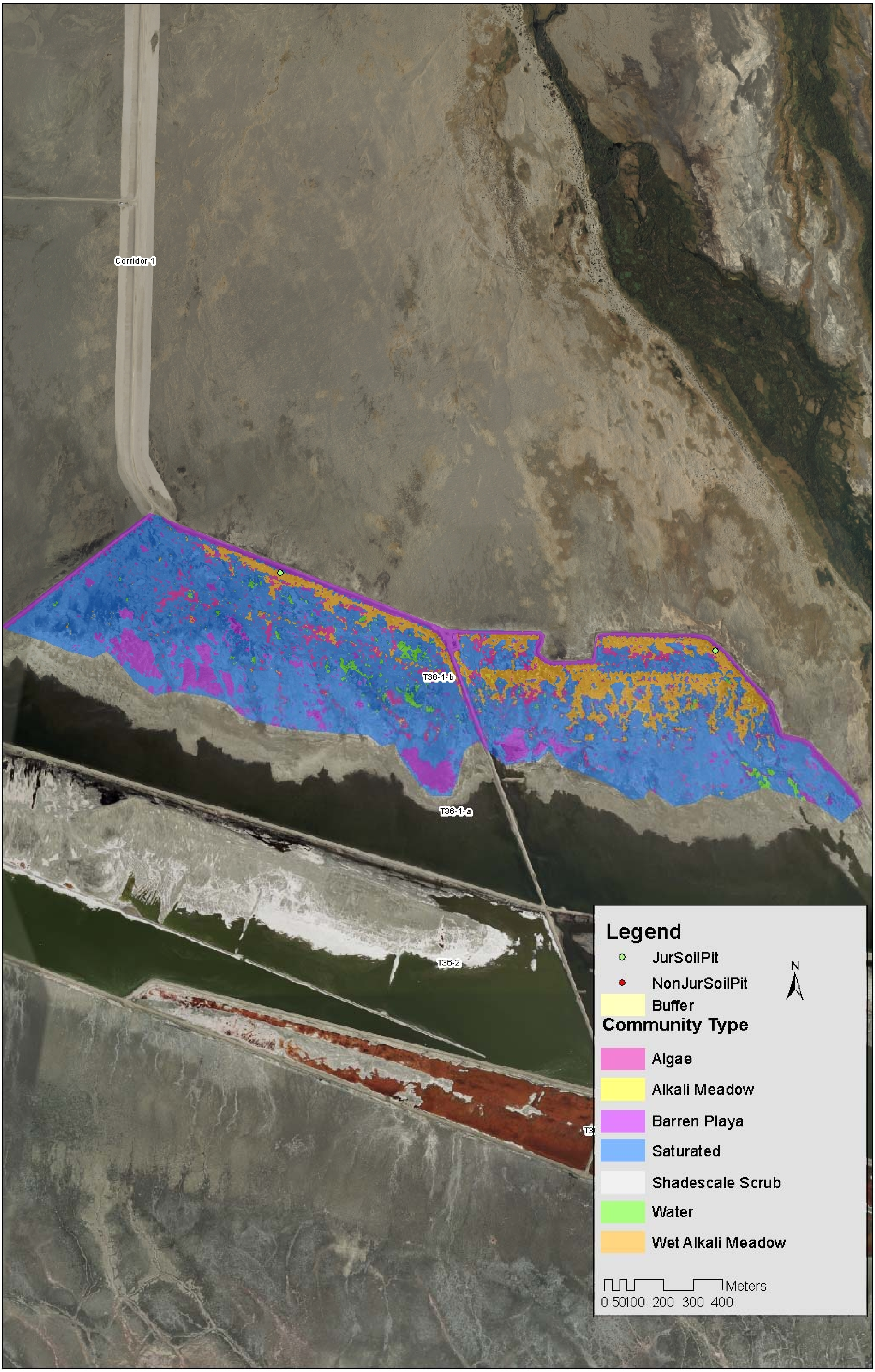
T30-1_a


136
T30-1-b
T30-1-a
T30-2
T29
T28N
Legend
JurSoilPit
NonJurSoilPit
Buffer
Community Type
Algae
Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
N
Meters
0 50 100 200 300 400

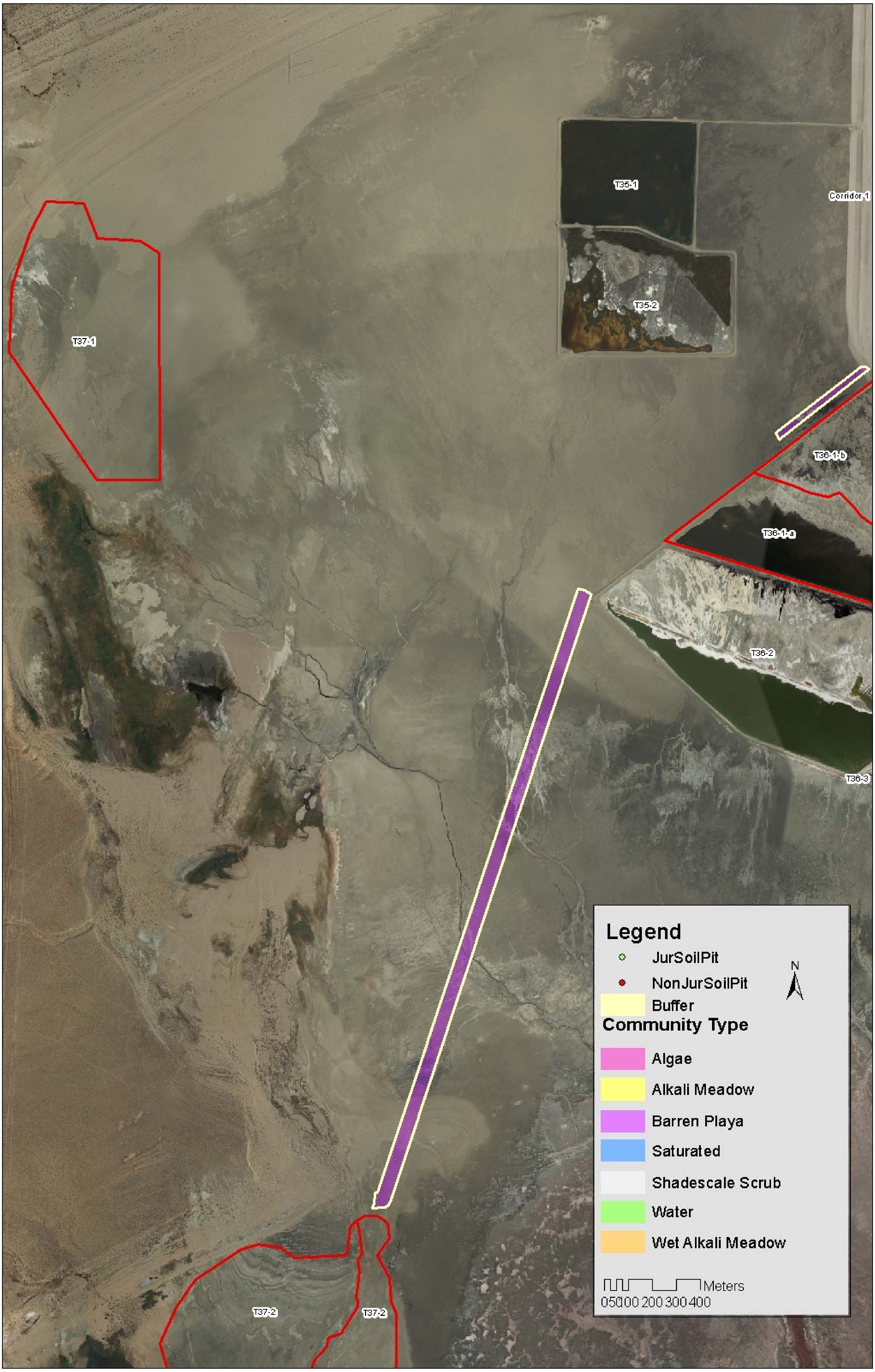
T30-1_b


136
T30-1-a
T30-1-b
T30-2
T28N
T29-3
T28S
Legend
JurSoilPit
NonJurSoilPit
Buffer
Community Type
Algae
Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
N
0 50100 200 300 400
Meters

T36-1_b


Corridor 1
T36-1-b
T36-1-a
T36-2
Legend
JurSoilPit
NonJurSoilPit
Buffer
Community Type
Algae
Alkali Meadow
Barren Playa
Saturated
Shadescale Scrub
Water
Wet Alkali Meadow
N
Meters
0 50100 200 300 400

Pipeline Option B



Pipeline Option C