

ENVIRONMENTAL ASSESSMENT FOR THE LOWER MOAPA COLLECTION SYSTEM

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March 27, 2008

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CHAPTER 1: BACKGROUND INFORMATION

1.1 INTRODUCTION

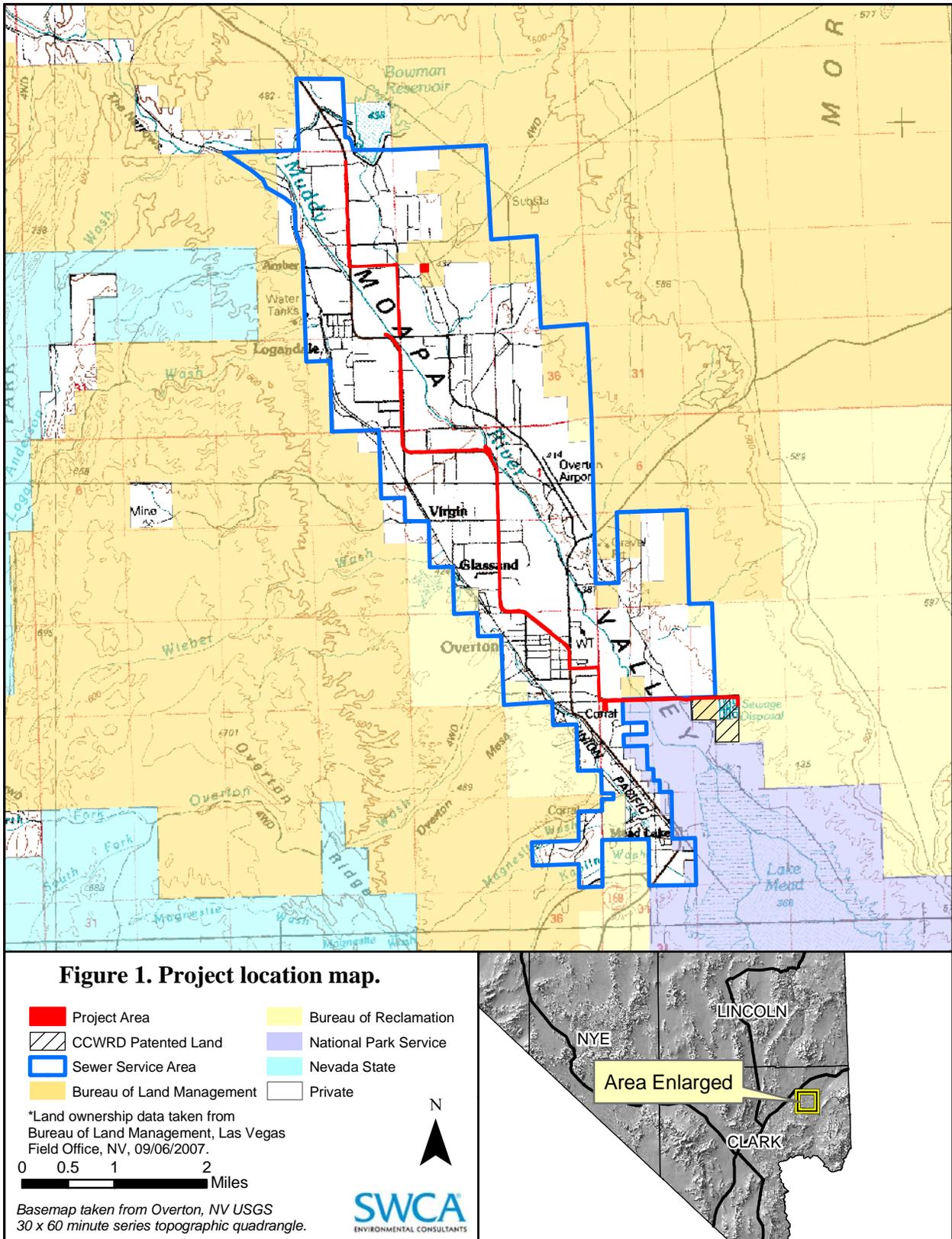
The Lower Moapa Valley (Valley) includes the townships of Overton and Logandale, which have an approximate population of 6,000 residents and are located in southern Nevada, approximately 50 miles northeast of Las Vegas, Nevada. These townships are both rural and farming communities with most properties in excess of one acre. Parts of the southern portion of the Valley in Overton are serviced by an existing, antiquated collection system, three lift stations, and a Water Resource Center (WRC), but the remaining areas rely on individual septic systems for wastewater treatment and disposal. The Clark County Water Reclamation District (CCWRD) has proposed expansion of the existing sewer collection system in the Valley to give existing residents the opportunity to hook into the system and provide a new sewer infrastructure to meet current requirements and allow for growth in the Valley.

The collection system would begin in Logandale, Nevada, and traverse south to the town of Overton, Nevada, ending nearly 8,000 linear feet west of the WRC (Figure 1). From the lift station, a water line, force mains, and a power and communications conduit bank necessary to operate and maintain the existing WRC would be installed from the end of the lift station east across the Overton Wildlife Management Area (OWMA) to the WRC. The new collection system would replace one existing, failing lift station with a gravity sewer and replace a second lift station with a new, modern, and higher capacity lift station. The OWMA occurs on National Park Service (NPS) land that is managed by the Nevada Department of Wildlife (NDOW) through a memorandum of agreement (MOA). This MOA outlines the terms under which the NPS and NDOW will work in partnership to manage the OWMA.

1.2 PURPOSE OF AND NEED FOR PROPOSED ACTION

The existing septic collection system is servicing approximately 3,200 of the total 6,000 residents in the Valley, while the remaining 2,800 residents use individual septic systems. This area is experiencing unprecedented growth (from 3,444 residents in 1990 to 5,784 residents in 2000) that will likely continue in the near future (USCB 2000). As the population increases, so will the demands on the existing infrastructure.

Currently, the Nevada Division of Environmental Protection (NDEP) considers the groundwater and soil (ground) in the Valley to be oversaturated with nitrates, and the nitrate levels are out of compliance with United States Environmental Protection Agency (EPA) standards for the Safe Drinking Water Act of 1974 ((Maximum Contaminant Level [MCL] <10 parts per million [ppm])). The primary contributor to nitrate saturation is the exceedingly high number of



individual septic systems which are out of date and do not meet current standards to prevent nitrate contamination. Additionally, the Park lift station, near Overton City Park, which serves the existing Overton sewer system, is near failure and needs to be replaced or taken out of service to avoid becoming out of compliance with NDEP regulations. The Park lift station is a CCWRD facility that occurs on private lands. The CCWRD is the agency responsible for meeting wastewater treatment needs for Clark County, and therefore is responsible for meeting these needs.

The purposes of this project are to:

- Meet both the current and future wastewater collection and treatment needs of the Valley, including meeting NDEP and EPA water quality requirements.
- Provide a major arterial for wastewater collection for Logandale and Overton.
- Reduce further nitrate saturation in the Valley.
- Help reduce sediment infiltration and improve the existing system's performance, which would help bring the system back in to compliance with NDEP and EPA requirements.
- Keep lift stations from failing and improve the system's capacity for future needs.

The CCWRD has an existing 40-foot (12-m) easement on NPS-managed land immediately north of the OWMA. This easement is currently used to service the existing force main and provide access to the existing WRC. Due to the proposed expansion of the collection system, there is a need for the NPS to amend the current ROW grant to augment the width of the existing easement to 100 feet (30 m), including lands within the OWMA. The added width would be used to construct additional force mains, a water line, and a power and communications conduit for the WRC. NPS approval of the increased easement width is the proposed action that requires compliance with the National Environmental Policy Act of 1969 (NEPA). Due to the proposed expansion of the collection system, it is necessary to amend the existing right-of-way on NPS lands. Therefore, the only federal agency with a decision to be made for this proposed project is the NPS, which must decide if the existing right-of-way should be amended to accommodate the project.

1.3 ISSUES

The Moapa Valley Town Advisory Board (MVTAB), Citizens Advisory Board (CAC), and city council meetings during 2005 and 2006 included discussions of the new collection system. Public comments made during these meetings included concerns over rate increases, connection fees, and traffic related problems during construction. In the fall of 2006 the NPS project team reviewed this project and public comments related to this project and determined that the major issues of concern would be Threatened and Endangered (T/E) Species, Cultural Resources, traffic, and socioeconomics. Biological surveys for sensitive species, specifically desert tortoise

(*Gopherus agassizii*) and Southwestern willow flycatcher (*Empidonax traillii extimus*), and a class III cultural resources inventory were performed by SWCA Environmental Consultants, Inc. (SWCA), for this project. The T/E and cultural surveys of the project area yielded negative results.

Additionally, future population growth in the Valley would be accommodated by the expanded sewer system and local governments would be faced with land use decisions to deal with those changes. Land use decisions are not within the jurisdiction of the NPS or the CCWRD. The local government is responsible for land use decisions in the Valley and is responsible for mitigating impacts from their decisions.

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

A new wastewater collection system is planned to service the Valley, specifically the townships of Logandale and Overton in southern Nevada. The new system will continue to use the existing WRC site. The proposed project would allow residents to connect to the system if desired, while new developments would be required to utilize the system, greatly reducing the number of new septic systems that could be built that would contribute to further nitrate saturation. The proposed system would include the following:

Actions intersecting with lands managed by the NPS:

- 45,500 lineal feet of sewer force main (5 parallel pipelines in a 9,100 lineal foot corridor) and appurtenances which cross 3,980 lineal feet of NPS land. This will involve tunneling under the Muddy River.
- 18,200 lineal feet of dry utility duct and one 12 inch (30 cm) waterline (utility lines) (two parallel pipelines in a 9,100 lineal foot corridor). This will involve tunneling under the Muddy River.
- 16 above ground valve boxes for the force main, approximately 24 inches square and 45 inches tall. Four of the valve boxes would occur on NPS land. Each valve box would be accessed from the existing Lewis Avenue.
- Five fiber optic boxes for the force main, approximately 30 inches by 36 inches and 36 inches tall. Only part of the fiber optic boxes would be above ground. Three of the fiber optic boxes would occur on NPS land. Each fiber optic box would be accessed from the existing Lewis Avenue.
- Tunneling beneath one hill between the eastern boundary of the OWMA and the WRC. The tunnel would be approximately 380 feet.
- The existing Lewis Avenue between the Lewis lift station and the WRC will provide access to the force mains, valve boxes, and fiber optic boxes.

Actions that would occur on lands not managed by the NPS:

- Approximately 44,465 lineal feet of sewer pipeline and appurtenances for the initial trunk pipeline. The pipeline diameter will range from 18 to 36 inches (46 to 91 cm).
- A 30-inch (76.2-cm) pipeline attached to the existing Yamashita Bridge over the Muddy River.
- Crossing the Muddy River using existing inverted siphon at the Gubler Bridge.
- A 20 million gallon per day (mgd) peak capacity sewer lift station on a 3-acre site at Lewis Avenue.
- Four acre temporary laydown area at the Clark County Fairgrounds.
- Three acre temporary laydown area at the Lewis lift station.
- Either an open cut trench or tunneling under Overton City Park for approximately 1,000 feet of sewer pipeline between East Virginia Avenue and South Deer Street.
- Connections to the existing collection system in Overton.
- Abandonment/removal of the Park lift station and Overton Main lift station.

- Construction of a new Lewis lift station with odor control facilities to replace the Overton Main lift station.

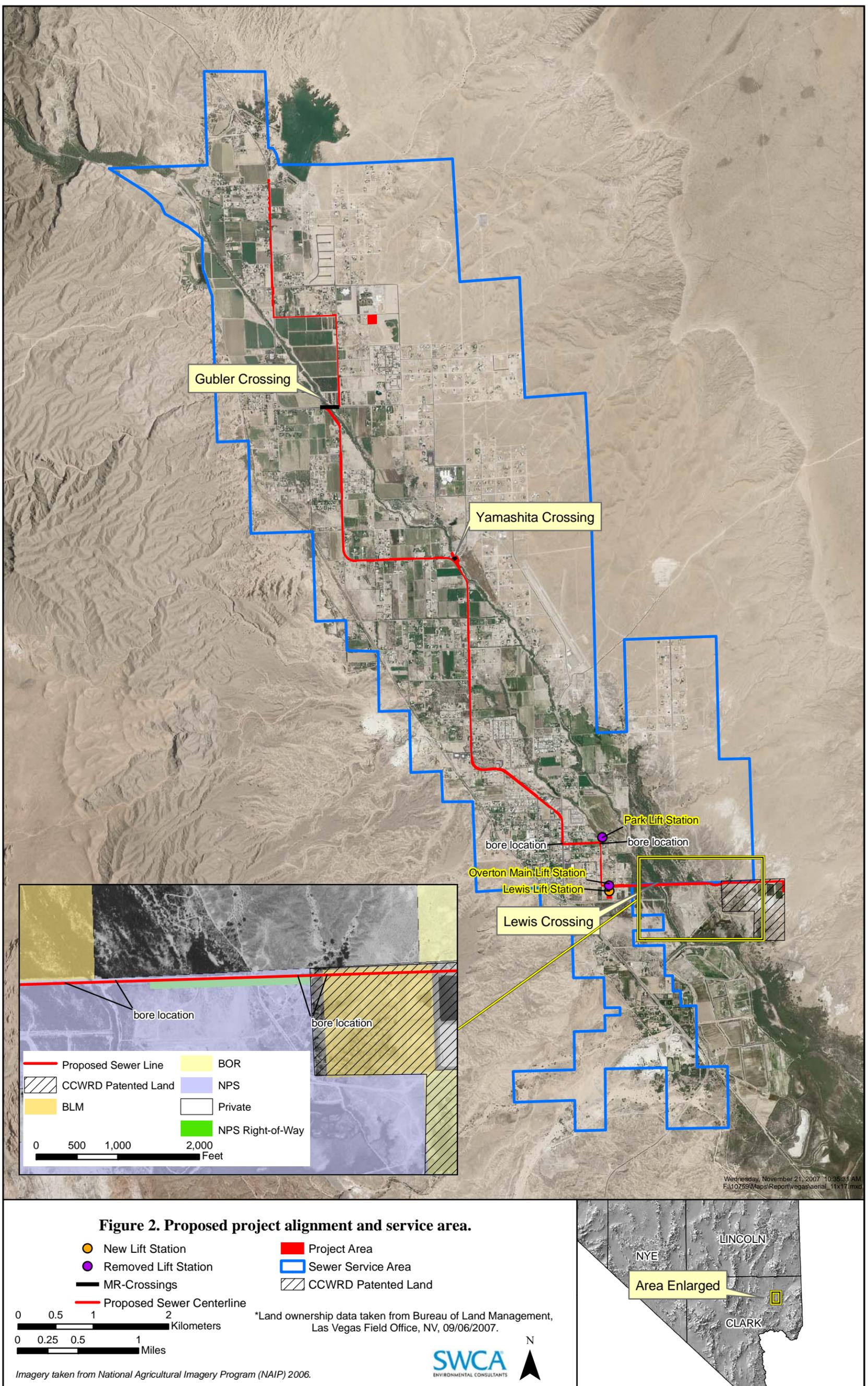
2.1.1 CONSTRUCTION

The proposed action would consist of removing two old lift stations and installing one new lift station, three force mains, and one gravity sewer line throughout 11 miles of right-of-way adjacent to existing roadways northwest of the WRC. As growth in the Valley increases, the sewer system would provide a primary line for new development to tie into. Construction would occur in phases over a 12 month period.

Figure 2 shows the sewer system alignment and service boundary of the proposed action.

The collection system would direct wastewater to an existing WRC located east of the town of Overton by way of the proposed sewer line, lift station, and force mains. The sewer lines would range from 18 inches to 36 inches (46 to 91 cm) in diameter and would be buried within a trench up to 25 feet (8 m) deep. The proposed sewer line alignments would traverse private land, Nevada Department of Transportation (NDOT) right-of-way, CCWRD easements, and Clark County right-of-way. The proposed force main alignments would traverse existing rights-of-way and CCWRD easements across NPS land. Sewer line would cross the Muddy River at two locations. Crossing One would be completed by connecting the existing inverted siphon at the Gubler Bridge and Crossing Two would be completed by attaching the sewer line to the existing Yamashita Bridge. The Muddy River crossings can be seen on Figure 2. Steel supports would attach the pipeline to the side of the bridge. The pipe would be connected to the downstream side of the river so the bridge provides protection. Ductile iron pipe would be used on the bridge crossing, and the pipe would be tested as a pressure pipe to minimize potential for leakage. With these precautions, the pipe is unlikely to fail. If a leak occurs, it would be visible and therefore can be corrected before problems develop. Catastrophic failure is unlikely and would probably mean that the bridge was severely damaged as well. The force main alignment would cross the Muddy River at one point, which would be completed by tunneling under the river. As mentioned in Chapter 5, a Stormwater Pollution Prevention Plan (SWPPP) and a Spill Prevention Control and Countermeasures Plan (SPCC) would be implemented to help further reduce any impacts below levels of significance.

The new Lewis lift station would be located on a 3-acre parcel in Overton. Facilities include a series of wet wells, a building for electrical equipment, odor control facilities, backup generator, and chain link fence. The initial average capacity of the lift station would be 9.5 mgd with an ultimate design capacity of 20 mgd. There would be no more than 3 acres of temporary disturbance associated with the laydown area at the new lift station. There would be no more than 1 acre of permanent disturbance associated with installation and maintenance of the new lift station.



At build-out, a series of up to six force mains, including the current line, would carry the wastewater from the lift station at Lewis Avenue 1.7 miles (2.7 km) to the WRC. The force mains and utility lines would cross land managed by the NPS, and CCWRD. The force mains would be buried within a trench up to 27 feet (8 m) wide and 10 feet (3 m) deep, and by tunneling 380 feet beneath the hill along Lewis Avenue east of the OWMA. Tunneling would involve 2 vertical boring pits on either side of the hill(s). Initially three new force mains would be installed to accommodate current needs. The additional two force mains would be installed as usage increases. Each installation would include trenching and laying new pipe within the right-of-way. The force mains and utility lines would cross the Muddy River parallel to Lewis Avenue by boring underneath the river to avoid impacts to the water and associated wetland areas. This would involve two boring pits, one to the west and the other to the east of the Muddy River. Lewis Avenue would be used as the access road along the force mains to the WRC. (Figure 2)

There would be no more than 4.6 acres of temporary disturbance associated with installation of the force mains. There would be less than one acre of new permanent disturbance associated with installation of the Lewis lift station, and the force mains including the bore pits, valve boxes, and fiber optic boxes. All actions associated with the project would occur on previously disturbed land.

2.1.2 OPERATION AND MAINTENANCE

At peak flow, the system lines would be able to carry up to 20 mgd of wastewater to the WRC. Daily operation of the lift station would be monitored remotely from the Las Vegas control plant 24 hours per day. Standard maintenance of the lift station would be completed by one CCWRD maintenance crew on a scheduled basis. Maintenance for the lift stations includes facility inspections, regular pump maintenance, exercising the generator, and checking the odor control facilities. Damages to the sewer line, once identified, would be appropriately fixed. Typically spot repairs would be made without excavation using industry standard methods, equipment, and materials. In the remote chance of catastrophic failure (e.g., pipeline collapse) excavation of that portion of pipeline may be needed. If a problem occurs with the pipe on the bridge, the sewage flow would be stopped in that portion of the pipe and bypassed between manholes. The section of pipe that was damaged would be removed, replaced and tested. Once complete, flow through the pipe would be restored. A traffic control plan may be implemented during any repair work.

2.2 NO ACTION

Under the No Action Alternative, a new sewage collection system would not be built. The existing sewage system would remain and individual septic systems would continue to serve as the standard for sewage disposal. The saturation of nitrates in the groundwater would increase and the area would continue to be out of compliance with NDEP and EPA requirements. As a result, NDEP would require the CCWRD to improve service to eliminate the septic system and reduce the nitrate levels in the groundwater. Without action by the CCWRD, homeowners would likely be required by NDEP to install expensive nitrate removal systems that many could not afford.

2.3 ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will promote NEPA, as expressed in Section 101 of NEPA. This alternative will satisfy the following requirements:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences;
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and,
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The Council on Environmental Quality states that the environmentally preferable alternative is “the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026 – 46 FR 18038).” According to NPS NEPA Handbook (DO-12), through identification of the environmentally preferred alternative, the NPS decision-makers and the public are clearly faced with the relative merits of choices and must clearly state through the decision-making process the values and policies used in reaching final decisions.

The proposed action is the environmentally preferable alternative because overall it would best meet the requirements in Section 101 of NEPA. The proposed action would balance population and resource use by providing a new, expanded wastewater collection system needed for the current population growth occurring in Moapa Valley, and by eliminating the potential for further increases in nitrate saturation of soils and groundwater from new septic systems. The new wastewater collection system would attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences. It would assure for all generations a safe, healthful, environment, and would permit a higher standard of living and a wide sharing of life's amenities.

Unlike the proposed action, the no-action alternative would not balance population and resource use because soil and groundwater nitrate saturation would continue to increase as a result of population growth in Moapa Valley. Unlike the proposed action, the no-action alternative would not attain the widest range of beneficial uses of the environment without undesirable or unintended consequences because although the existing collection system would remain available, nitrates from existing and new septic systems would continue to compromise water quality, and would not assure a safe, healthful, and esthetically pleasing environment.

2.4 COMPARISON OF ALTERNATIVES

Table 1. Comparison of Alternatives

Resource	Proposed Action	No Action
Air Quality	Minor adverse localized impacts.	A continuation of current conditions with potential localized increased olfactory impacts occurring from untreated odor.
Hydrology	Minor, localized, short-term adverse impacts. The proposed action would result in a reduction in additional nitrate saturation.	A continuation of current conditions with potential for groundwater to increasingly become saturated with nitrates.
Geology and Soils	Minor short term impacts.	A continuation of current conditions with potential for soils to increasingly become saturated with nitrates.
Cultural and Historic Resources	There would be no impacts to cultural and historic resources.	No change from current conditions.
Vegetation	There would be minor, adverse, localized impacts	No change from current conditions.
Wetlands/Riparian	There would be minor, (<0.10 - acres) adverse, localized impacts.	No change from current conditions.
Wildlife	There would be minor impacts to wildlife.	No change from current conditions.
Threatened and Endangered Species	There would be no effect to Threatened and Endangered species from the proposed action.	No change from current conditions.
Land Use	The proposed project would not result in a change in existing land use or ownership.	No change from current conditions.

Recreation	There would be minor, adverse, short-term direct impacts to visitor experience and recreation, which would occur from construction activities associated with the new collection system.	No change from current conditions.
Transportation	There would be minor, adverse, short-term direct and indirect impacts to traffic, which would occur from delays caused by construction activities associated with the proposed action.	No change from current conditions.
Visual Resources	The proposed action meets the visual objectives National Park Service in the project area.	No change from current conditions.
Soundscapes	There would be localized short-term impacts to the noise-sensitive receptors in the project area from construction activities.	No change from current conditions.
Socioeconomics	There would be minor, short-term impacts to quality of life and socioeconomic conditions within the project area.	No change from current conditions.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

This section will briefly describe the alternatives considered and the reasons why they were eliminated from further analysis.

2.5.1 PACKAGE PLANTS

One alternative considered was to develop separate sewage treatment 'package plants' as new developments are constructed throughout the Valley. A 'package plant' is a developer-owned and operated sewage treatment system built to accommodate a finite number of residences. This alternative would not address the need to reduce the current level of groundwater saturation from individual septic systems, and compliance issues with NDEP and EPA requirements would continue. Additionally, this option was not approved by the Citizens Advisory Counsel (CAC), which was created to provide input into the new sewer system; it would increase the level of maintenance required by the CCWRD and the increased cost of this alternative makes it impractical. Therefore, this alternative was eliminated from further analysis.

2.5.2 REPAIR OF EXISTING SYSTEM

Another alternative considered but eliminated was to only repair the existing sewer collection system. This alternative would limit the collection system to Overton and would not meet the needs for septic reduction in Logandale and nitrate saturation would continue in that area. Additionally, the costs of these repairs spread across such a small user base would result in impractical costs for those homeowners. Therefore, this alternative was eliminated from further analysis.

CHAPTER 3: AFFECTED ENVIRONMENT

This section provides a description of the existing environment in the project area and the resources that may be affected by the proposed action and alternatives under consideration. Descriptions are presented for Air Quality, Geology and Soils, Hydrology, Wetland/Riparian, Vegetation, Wildlife, Special Status Species, Cultural Resources, Noise, Visual Resources, Socioeconomics, Land Use, Visitor Experience and Recreation, and Transportation.

The following resources have been considered, but do not occur in the project area and are not addressed further in the environmental assessment.

- Range—No active grazing occurs in the project area.
- Environmental Justice—No Environmental Justice populations occur in the project area.

3.1 AIR QUALITY

The Clark County Department of Air Quality and Environmental Management is the regulatory and enforcement agency for air quality matters in Clark County, Nevada. Air quality is assessed by the presence of six common pollutants—sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), leads, ozone (O₃) and suspended particulate matter (PM). PM is differentiated into two classes: particle sizes less than 2.5 microns (PM_{2.5}) and particle sizes less than or equal to 10 microns (PM₁₀).

Parts of Clark County, Nevada, are currently in non-attainment for the EPA PM₁₀ Standard (EPA 2007). The project area is outside of the non-attainment boundary and air quality is considered to be generally good. There are no air quality monitoring stations within the project area (CCDAQEM 2007 Station Map). Sources of air pollutants in the project area include: emissions from motor vehicles, windblown dust from disturbed areas or areas without vegetation, fugitive dust from off-road vehicle use on dirt roads, and fugitive dust from disturbed lands and construction activities.

The project area is adjacent to the Lake Mead National Recreation Area (NRA). The NRA is designated as a Class II air quality area protected under the Clean Air Act, which allows only for moderate increases in air pollutants. Pollutant concentrations in the Lake Mead National Recreation Area (NPS, 2003) and in Lower Moapa Valley are in attainment and do not exceed national ambient air quality standards (EPA 2007).

3.2 GEOLOGY AND SOILS

The project area is situated within the lower portions of the Moapa Valley, which is a gently sloping valley that connects the Pahranaagat Wash to the Overton Arm of Lake Mead. The Muddy River is the main body of water that has helped to carve out this Valley over the centuries. This river is a small northwest-to-southeast trending waterway, which rarely exceeds 4 feet (1.2 m) in width. The Moapa Valley is bordered by the North Muddy Mountains to the west and by the Mormon Mesa to the east.

Geologically, the entire Moapa Valley is characterized by gravelly to sandy gravel alluvium. This gravel is comprised of angular to surrounded gneiss, granite, pegmatite, quartzite, limestone, and dolomite mixed with lesser amounts of well-rounded quartzite and black and grayish-green chert. Most of this gravel is smaller than 1 foot (0.3 m) in diameter. Throughout the region, there is typically no A or B horizon, but the terrace surface is commonly covered with eolian sand. In many places, the gravel has been covered by poorly to moderately consolidated, poorly sorted, and poorly bedded sand from the Muddy Creek Formation. This thick layer of sandy, silty alluvium was deposited over the gravel beds during the aggradational cycle (Williams 1997).

The web soil survey data described in Appendix A is based on the Soil Survey of the Virgin River Area, Nevada and Arizona, U.S. Department of Agriculture Soil Conservation Service (NV608). There are 24 different soil types occurring within the project area (Appendix A). However, much of the project area is situated along previously disturbed right-of-way, and additional impacts to these soils are not analyzed. Some of the project area along Lewis Avenue will require disturbance to previously undisturbed geology and soils. Soils in this undisturbed area include Tonopah Very Gravelly Sandy Loam, 4–15 percent slope, Tobler Fine Sandy Loam Strongly Saline, Calico Loamy Fine Sand, Coarse Variant, Strongly Saline, and Tobler Silt Loam, Wet. The soil descriptions in this section are based on information from the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) web soil survey (USDA 2007).

3.3 HYDROLOGY

The project area is situated in the greater Colorado River Hydrographic Basin and the Lower Moapa Valley Groundwater Basin (220). The Muddy River is the primary body of water within Basin 220 and it originates at several springs, including the Warm Springs complex and Muddy Spring, in the Upper Moapa Valley Groundwater Basin (219). These springs discharge approximately 37,000 acre-feet of groundwater annually and it is believed that this groundwater originates in the carbonate-rock aquifer system, which may include flows from the White River Flow System and the Meadow Valley Flow System (NPS 2002). The Muddy River also receives flows from the Meadow Valley Wash and from general ephemeral flow during storm events.

The general water quality of the Muddy River is poor due to high levels of phosphorous, boron, arsenic, and iron. Because of these elevated chemical levels, the Muddy River has been listed on the State of Nevada's 303(d) Impaired Waters List. Therefore, water used for domestic purposes is collected from groundwater near the Warm Springs area, in the Upper Moapa Valley Basin, and piped down to the towns of Logandale and Overton. Much of the surface water that flows down the Muddy River from these upstream springs is used for irrigation purposes in the Lower Moapa Valley Basin. The Wells Siding Dam, Bowman Reservoir, and associated irrigation channels are maintained by the Moapa Valley Irrigation Company and convey up to 16,850 acre-feet of water to cropland in the Lower Moapa Valley annually (UER 2005).

With the exception of the Muddy River, the Lower Moapa Valley is composed mostly of alluvial soils and dry ephemeral washes. These washes, as well as most washes in southern Nevada, most commonly convey large amounts of water during flash floods associated with intense rainfall

over small areas of desert (NDWP 2007). However, it is assumed that much of the floodwater in these ephemeral washes is lost through infiltration and evaporation, and many of these washes have been disturbed by previous development in the Valley. During field surveys performed to complete the Jurisdictional Determination and Wetland Delineation Report (SWCA 2006), biologists noted only one ephemeral wash that crosses beneath the proposed pipeline alignment, along Lewis Avenue. This Jurisdictional Wash covers only 0.01 acre within the proposed pipeline right-of-way. Biologists also noted wetland conditions in several areas along the proposed pipeline. All of these were recorded within a few feet of the edge of the Muddy River. These wetland conditions, which are typical along desert river systems, are explained in depth in the Wetlands and Riparian section below.

3.4 WETLAND/RIPARIAN

Within the project area there are 0.39 acres of wetland and 7.30 acres of riparian plant communities (SWCA 2006). These wetland/riparian resources are often found in close association, as they both require continual or periodic flood events for growth. The primary difference between these two plant communities lies in their ability to grow in water-saturated soils.

True wetland plants are able to live in water-saturated soils. These plants are tolerant of anaerobic conditions and are often rooted underwater or growing along the waters edge. A few examples of wetland vegetation found in the project area include arrow weed (*Pluchea sericea*), cattail (*Typha* spp.), common reed (*Phragmites australis*) and saltcedar (*Tamarix ramosissima*). Within the project area, this community is found growing along the Muddy River and occurs at three locations along the proposed collection system including the Gubler Bridge, Yamashita Bridge, and Lewis Avenue Crossing.

Riparian communities can tolerate a broader range of water saturation but are unable to grow in water-saturated soils throughout the season. This community creates a buffer between wetland and upland plant communities and is indicative of a sporadic water supply. Examples of riparian plant species present in the project area include cottonwood (*Populus* spp.), willow (*Salix* spp.), and ash (*Fraxinus* spp.). Within the project area, riparian plant communities are found at the same three locations described above, as well as along Lewis Avenue.

3.5 VEGETATION

The majority of the project area is situated within previously disturbed rights-of-way. Construction of the force main, along Lewis Avenue, would include new disturbance of previously disturbed habitat. Based upon Southwest Regional GAP (SWReGAP) analysis, there are four land cover types that should be present within this portion of the project area (EPA 2007). Land cover types are correlated with both native and non-native vegetation communities and, within the project area, include the Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (creosote bush community), North American Desert Wash Community (desert wash community), Invasive Southwest Riparian Woodland and Shrubland (saltcedar community), and the North American Warm Desert Badland (saltbush plant community). Of the total 5.6 acres of disturbance, these are composed of 2.7 acres of saltcedar community, 2.0 acres of creosote bush community, 0.78 acres of saltbush community, and 0.11 acres of desert wash community (Table 2). The vegetation communities within the area of disturbance are marginal at best and include a

great number of invasive species and areas cleared of all vegetation. A majority of the land proposed for inclusion in the amended ROW through the OWMA has been cleared of all vegetation.

Table 2. Vegetation Communities Within the Project Area

Vegetation Community	Acreage	% of Disturbance
Creosote Bush	2.0	36
Desert Wash	0.11	2
Saltcedar	2.7	48
Saltbush	0.78	14

3.5.1 VEGETATION COMMUNITIES

The creosote bush vegetation community is co-dominated by two plant species, creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). This moderately dense (2–50 percent cover) vegetation community is relatively common within the Mojave and Sonoran deserts and can typically be found on valleys, bajadas, plains, and low hills below 4,000 feet (1,212 meters) elevation. Other plants found in association with the creosote bush community include Mexican bladder sage (*Salazaria mexicana*), spiny menodora (*Menodora spinescens*), turpentinebroom (*Thamnosma montana*), Nevada jointfir (*Ephedra nevadensis*), Mormon tea (*Ephedra viridis*), banana yucca (*Yucca baccata*), and Joshua tree (*Yucca brevifolia*). The creosote community often provides habitat for the Mojave desert tortoise.

The desert wash community is restricted to intermittently flooded, linear or braided wash channels. These channels cross bajadas, mesas, plains, and desert floors within desert scrub or desert grassland dominated landscapes. Vegetation within this community ranges from sparse to moderately dense and grows primarily along the banks of the wash, though it may occur in the channel. Some plant species associated with this community include small trees such as mesquite (*Prosopis* spp.), desert willow (*Chilopsis linearis*), and catclaw acacia (*Acacia greggii*), and shrubs such as burrobush (*Hymenoclea salsola*), baccharis (*Baccharis* spp.), desert almond (*Prunus fasciculata*), and Mexican bladder sage.

The saltcedar vegetation community is dominated by invasive plants such as saltcedar and Russian olive (*Elaeagnus angustifolia*). The saltcedar community occurs in wet soils, often within wetland and riparian areas where it displaces native riparian species such as Fremont cottonwood (*Populus fremontii*) and willow. Saltcedar often grows in very dense stands, creating a monoculture without an understory and eliminating competing plant species. While this is an invasive plant community, it may be used by sensitive species such as the Southwest willow flycatcher (Suckling et al. 1992).

The saltbush community is the least abundant vegetation community in the project area. This community is sparsely vegetated (10 percent cover or less) and composed of dwarf shrubs and herbaceous vegetation. Substrate for this community consists of marine shale and mudstone layers. The harsh soil conditions, including high rates of deposition and erosion, are primary factors that limit vegetation diversity and abundance.

3.5.2 INVASIVE SPECIES

Infestations of invasive species are a growing concern to landowners and land managers due to the difficulty of eradicating these populations once they have become established. Invasive plant species can alter nutrient cycles, erosion rates, and fire regimes and ultimately replace less competitive native plants (Brooks and Matchett 2003). Documented invasive species present in the project area include saltcedar, red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), and Russian thistle (*Salsola tragus*). These invasive species are widespread through the project area, and occur throughout much of the Mojave desert near developed or disturbed areas.

3.6 WILDLIFE

The proposed collection system would require both crossing the OWMA and increasing the NPS easement into lands within the OWMA. The OWMA provides habitat for an abundance of wildlife, including 22 species of fish, 28 species of reptiles and amphibians, 47 species of mammals, and 265 species of birds (NDOW 2005). Specific surveys were not conducted for species that are not federally listed or considered state sensitive species. However, a variety of wildlife was noted while conducting surveys for such federally and state listed species.

3.6.1 MAMMALS

During Mojave Desert tortoise surveys, the white-tailed antelope ground squirrel (*Ammospermophilus leucurus*) was the only species of mammal observed.

Species common to the OWMA, however, include desert cottontail (*Sylvilagus auduboni*), bobcat (*Felis rufus*), kit fox (*Vulpes macrotis*), beaver (*Castor* spp.), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale putorius*), and long tailed weasel (*Mustela frenata*) (NDOW 2005).

3.6.2 REPTILES

Species observed during Mojave Desert tortoise surveys include the Western whiptail (*Cnemidophorus tigris*), desert iguana (*Dipsosaurus dorsalis*), and zebra-tailed lizard (*Callisaurus draconoides*).

Reptile species common to the OWMA include the side-blotched lizard (*Uta stansburiana*), Great Basin whiptail lizard (*Aspidosceis [Cnemidophorus] tigris*), Western fence lizard (*Sceloporus occidentalis*), Gopher snake (*Pituophis catenifer*), Mojave rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*) (Personal communication with T.Kipke, NDOW 2007).

3.6.3 FISH

No surveys specifically for fish were conducted; however, fish species commonly occurring in the OWMA and the Overton Arm portion of Lake Mead include game fish such as channel catfish (*Ictalurus punctatus*), largemouth bass (*Micropterus salmoides*), striped bass (*Morone saxatilis*), rainbow trout (*Oncorhynchus mykiss*), and black crappie (*Pomoxis nigromaculatus*) (NDOW 2005).

3.6.4 BIRDS

Species seen during Mojave desert tortoise surveys included mourning dove (*Zenaida macroura*), lesser nighthawk (*Chordeiles acutipennis*), tree swallow (*Tachycineta bicolor*), rough-winged swallow (*Stelgidopteryx serripennis*), horned lark (*Eremophila alpestris*), and American kestrel (*Falco sparverius*).

In addition, a diversity of riparian species was observed during Southwestern willow flycatcher surveys. Common riparian species observed included red-winged blackbird (*Agelaius phoeniceus*), brown-headed cowbird (*Molothrus ater*), and snowy egret (*Egretta thula*).

Songbirds commonly associated with willow/cottonwood areas of the OWMA include Bell's vireo (*Vireo bellii*), yellow warbler (*Dendroica petechia*), and song sparrow (*Melospiza melodia*). Marsh wrens (*Cistothorus palustris*), loggerhead shrikes (*Lanius ludovicianus*), crissal thrashers (*Toxostoma crissale*), and black phoebes (*Sayornis nigricans*) are also known to nest in the area (NDOW 2005).

Raptors known to nest in the area include the great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*) and American kestrel. Golden eagles (*Aquila chrysaetos*), prairie falcons (*Falco mexicanus*), and peregrine falcons (*Falco peregrinus*) also use the area for foraging (NDOW 2005).

3.7 SPECIAL STATUS SPECIES

The project area has potential to contain a variety of sensitive plant and wildlife species. Such special status species might receive federal protection as a U.S. Fish and Wildlife Service (USFWS) candidate, threatened, or endangered species. Of the 16 USFWS listed species occurring in Clark County, Nevada, five were identified by the USFWS as having potential to occur within the project area. Such federally listed species receive protection under the Endangered Species Act of 1973, as amended.

Species included on the sensitive species list for the state of Nevada, which is maintained by Nevada's Natural Heritage Program, are also included as special status species.

Many species of migratory bird can also be found within the proposed project area. The USFWS defines a migratory bird as any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle. All migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 et seq.).

3.7.1 THREATENED AND ENDANGERED SPECIES

Of the five federally listed species having the potential to occur within the project area, potential habitat was found to occur for only two species, the desert tortoise and the Southwestern willow flycatcher (Table 3). Field surveys documented five tortoise burrows in the Zone of Influence (ZOI), indicating that tortoise have inhabited the desert in the immediate vicinity of the project area. No individual tortoises were seen during surveys. There is designated critical habitat for the Southwestern willow flycatcher approximately 10 miles from the project area; the project area itself is not in an area of critical habitat for the Southwestern willow flycatcher. While

marginal nesting habitat for the Southwestern willow flycatcher was noted, no individual birds were seen during surveys.

Table 3. USFWS Listed Endangered, Threatened, and Candidate Species Within Project Area

Common Name	Scientific Name	Status	Potential Habitat*
Birds			
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	C	None [#]
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	Present
Yuma Clapper Rail	<i>Rallus longirostris yumanensis</i>	E	None [#]
Reptile			
Desert tortoise	<i>Gopherus agassizii</i>	T	Present
Fish			
Razorback sucker	<i>Xyrauchen texanus</i>	E	None [#]

Source: USFWS 2005

Status: C = Candidate; T = Threatened; E = Endangered

[#] Although the USFWS identified this species as potentially occurring in the project area, no suitable habitat or individuals were found during the course of field surveys.

3.7.2 SENSITIVE SPECIES

In addition to threatened and endangered species, the Nevada Natural Heritage Program (NNHP) has identified four state sensitive species with potential to occur within the project area. These include two bird species, one species of fish, and one species of plant. These species and their status are listed below in Table 4. While species-specific surveys were not conducted for state listed sensitive species, biologists did make note of these species when encountered.

One plant species, the threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*), has the potential to occur within the project area. While species-specific surveys for threecorner milkvetch were not conducted, no suitable habitat was observed during other field surveys. This species requires deep and stabilized sand dune habitat (NNHP 2007). This habitat type is not present within the project area.

3.7.3 MIGRATORY BIRDS

The federal MBTA states that it is unlawful to "pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not." Depending on distribution, abundance, and breeding habits, the Secretary of the Interior may determine how much a migratory bird may be hunted or taken, if at all (USFWS 2007). Currently, there are 836 species that are protected under the federal MBTA (USFWS 2002). However, 41 of these protected species were found during field surveys. This list includes Say's phoebe (*Sayornis saya*), marsh wren (*Cistothorus palustris*), and Bewick's wren (*Thryomanes bewickii*). The list does not include any raptor species, and is comprised largely of passerine species. A list of these 41 species can be found in Appendix B.

Table 4. State Listed Sensitive Species Potentially Occurring in Project Area

Common Name	Scientific Name	Status	Potential Habitat
Birds			
Western Least Bittern	<i>Ixobrychus exilis hesperis</i>	Yes	Yes
Phainopepla	<i>Phainopepla nitens</i>	Yes	Yes
Fish			
Virgin River Chub (Muddy River pop.)	<i>Gila seminuda</i>	Yes	Yes
Plants			
Three-corner milkvetch	<i>Astragalus geyeri</i> var. <i>triquetrus</i>	CE	No

Source: NNHP 2007

Status: Yes: Species protected under NRS 501

CE: Critically Endangered. Protected under NRS 527.260-.300

3.8 CULTURAL RESOURCES

Cultural resources include archaeological resources and locations with religious and/or cultural significance to living Native American groups. Archaeological resources consist of sites, features, and artifacts. Archaeological resources can be prehistoric, historic, or both. In North America, archaeological sites are places where human activity occurred between 50 and 12,000+ years ago. Features and artifacts are evidence of human activity that may or may not themselves be parts of sites. Features differ from artifacts by being stationary. Artifacts are items that people made and/or used. Cultural resources are identified by conducting inventories, consulting records, consulting with Native American groups, or oral history.

3.8.1 REGULATORY SETTING

Section 106 of the National Historic Preservation Act (NHPA), as amended in 2000, requires government agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places (NRHP). The procedures for complying with Section 106 are outlined in the Advisory Council for Historic Preservation regulations 36 CFR § 800, as amended in 2004. Guidelines for treatment of properties with traditional religious and cultural importance to Native Americans must also be considered in accordance with various laws, including Section 101 of the NHPA, the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), and Sacred Sites Executive Order 13007.

Cultural resources present within the Area of Potential Effect (APE) are identified and evaluated for National Register eligibility, followed by an assessment of effect on those eligible resources prior to the implementation of the proposed action or any of the alternatives. This includes both Class I and Class III inventories of the APE specific to each undertaking. If historic properties of significance to Indian tribes are present, the federal agency is required to consult with the tribes, per 36 CFR § 800.2(c)(2)(ii). As the lead federal agency, the NPS is responsible for officially determining NRHP eligibility, project effects, and consultation with relevant parties.

3.8.2 RESULTS OF CLASS I AND CLASS III

As required by 36 CFR § 800, a cultural resources inventory was conducted in the APE. First, a Class I inventory was conducted. Cultural resource files at the Harry Reid Center for Environmental Studies at the University of Nevada, Las Vegas (HRC), as well as BLM General Land Office (GLO) records (<http://www.glorerecords.blm.gov>) and the Clark County Assessor's files (<http://www.co.clark.nv.us/ASSESSOR/>) were searched to identify and locate previous projects and archaeological sites within 1 mile of the APE. The records search indicated that 41 previous cultural resource inventories and numerous academic projects have been conducted within 1 mile of the APE.

No archaeological sites have previously been recorded in the APE, though 266 sites have been recorded within 1 mile of the APE. Five sites identified within the 1 mile Class I buffer are listed in the NRHP. Eleven sites have been recommended as eligible for nomination to the NRHP. Forty-one sites have been considered not eligible for nomination to the NRHP, and 209 sites remain unevaluated with regard to NRHP eligibility. The Class III inventory was conducted with negative results—no archaeological materials were identified within the proposed project's APE.

3.9 SOUNDSCAPES

Noise-sensitive receptors are locations where activities that could be affected by increased noise levels occur. Noise-sensitive receptors within the project area include private residences, hotels, schools, churches, parks, libraries, and the OWMA.

Noise levels are measured in decibels (dBA). There is no detailed information on existing noise levels in the project area. Sources of noise in the project area include motorized vehicle traffic, construction activities, and helicopter overflights.

3.10 VISUAL RESOURCE MANAGEMENT

The Moapa Valley is in proximity to many scenic attractions, including Valley of Fire State Park, North Muddy Mountains, OWMA, and the Lake Mead National Recreation Area. Moapa Valley itself is a rural setting that includes the townships of Logandale and Overton, into Lake Mead.

The characteristic landscape of Moapa Valley includes the Muddy River, as well as flat to rolling terrain with low brush and some trees in the foreground and mountains and open vistas in the background. The project area includes a variety of developed lands. The developed lands include linear features such as roads, power lines, and fences, as well as single-family homes, businesses, and agricultural pastures with low vegetation. Along Lewis Avenue, there are several single family homes, two prefabricated steel buildings, barbed wire fencing, and some land cleared of all vegetation within the OWMA.

The project area crosses lands in the Lake Mead NRA managed by the NDOW through an MOA. The NPS is required to preserve designated scenic features of the NRA. The project area is a little-visited portion of the NRA, and there are no designated scenic features of the NRA within the project area.

3.11 SOCIOECONOMICS

Socioeconomics looks at demographic and employment measures because they are the key indicators for housing demand, educational requirements, and infrastructure needs. The geographic area being considered when looking at the socioeconomic indicators is the Census Designated Place (CDP) of Moapa Valley in Clark County, Nevada. CDPs are identified by the U.S. Census Bureau for statistical purposes only. The Moapa Valley CDP was delineated to provide data for the settled concentration of population within the lower Moapa Valley and includes the townships of Overton and Logandale.

Moapa Valley is a rural agricultural community in Southern Nevada. Moapa Valley's primary sources of employment include construction, health and human services, and tourism (MVTAB 2005). As of the U.S. census of 2000, there were 5,784 people residing in the CDP of Moapa Valley, with an estimated population of 6,984 in 2006. There was a 4 percent unemployment rate in 2000. The median income for a household in the CDP was \$39,942, and the median income for a family was \$47,575. The per capita income for the CDP was \$16,696. About 5.7 percent of families and 6.9 percent of the population lived below the poverty line (USCB 2000).

The population of Moapa Valley is projected to double by 2020 and the number of households is projected to be more than 5,000 by 2020, up from 2,042 in 2000 (USCB 2000).

3.12 LAND USE

The project area is approximately 11 miles long and is composed of developed and undeveloped lands along existing right-of-way and easements across both non-federal and federal lands. A majority of the project would occur on existing CCWRD easements, NDOT right-of-way, and County right-of-way. Twelve acres of the proposed project occur on NPS land.

Non-federal lands within the project area are managed for a variety of uses. Municipal lands within the project area include parks, schools, and other public use facilities. The Nevada Department of Transportation maintains State Route 169 through the project area. Private lands within the project area include residential homes, businesses, and fields for agriculture.

Federal lands within the project area include a 40-foot (12-m) easement to the CCWRD across NPS lands for the existing collection system and lands managed by the Nevada Department of Wildlife (NDOW) as part of the OWMA through an MOA. An existing well and pipeline that are not functional occur within the OWMA.

3.13 VISITOR EXPERIENCE/RECREATION

Moapa Valley is surrounded by public lands and has almost year-round temperate weather, allowing for diverse recreational activities. Recreation activities within and adjacent to the project area include wildlife observation, horseback riding, off-highway vehicle (OHV) activities, fishing, hunting, trapping, and hiking.

Overlapping with the northern edge of the project area is Bowman Reservoir. Bowman Reservoir is a destination for fishing, wildlife observation, and OHV activities. Further north are the

Mormon Mountains Wilderness and Old Spanish trade routes. To the east of the project area are the Mormon Mesa and numerous prehistoric and historic trails and sites.

The southern edge of the project area overlaps with a portion of the OWMA, and the Lake Mead NRA. The OWMA lies in the lower extreme of the Moapa River valley, where it flows into the north end of the Overton Arm of Lake Mead. The portion of the OWMA that is inundated by Lake Mead supports some of the heaviest recreational fishing of any reservoir in Nevada. Statistics from the NPS show 546,674 recreational visitors by automobile to the North Shore of Lake Mead in 2006 (NPS 2006). To the south of the project area is Valley of Fire State Park.

To the west of the project area are the North Muddy Mountains and Valley of Fire, which includes the Logandale multiple use trail system, the community's first planned trail system.

In addition, within Moapa Valley, Clark County operates and maintains two parks, two swimming pools, one fairground site, and one ball field. The State of Nevada operates the Lost City Museum in Overton.

3.14 TRANSPORTATION

Moapa Valley is well served by a regional road network. Interstate 15 bisects the valley at Glendale and paved state highways lead up and down the valley from that point. From Glendale, it is 49 miles to Las Vegas and 63 miles to St. George, Utah, via I-15. State highways within Moapa Valley include State Highway 168, which runs northwest from I-15 east of Moapa and Warm Springs; and State Highway 169, which runs southeast from I-15 through Moapa Valley, returning to I-15 through the Valley of Fire State Park. State Route 169, Moapa Valley Boulevard, is the main travel route through the project area. Additional county-maintained roads form a local network throughout the project area.

Primary reasons for travel through the project area include commuting, recreation, and tourism. The regional road network and easy accessibility to I-15 makes commuting to remote sites of employment, primarily the Las Vegas Valley, possible. The number of Moapa Valley residents who spend more than 45 minutes commuting more than doubled from 1990 to 2000 (MVTAB 2005). The NPS compiles visitor data by different zones of the NRA. The closest zone to Moapa Valley is the North Shore Area. Statistics from the NPS show 546,674 recreational visitors by automobile to the North Shore of Lake Mead in 2006 (NPS 2006).

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This section presents the likely beneficial and adverse effects to the natural and human environment that would result from implementing the proposed action and alternatives under consideration. This section describes short-term and long-term effects, direct and indirect effects, cumulative effects, and the potential to impair park resources. Interpretation of impacts in terms of their duration, intensity (or magnitude), and context (local, regional, or national effects) are provided where possible.

METHODOLOGY

This section contains the environmental impacts, including direct and indirect effects and their significance to the alternatives.

Impact analyses and conclusions are based on professional staff knowledge of resources and the project area, review of existing literature, and information provided by experts in the NPS, other agencies, and the public. Any impacts described in this section are based on preliminary design of the alternatives under consideration. Effects are quantified where possible; in the absence of quantitative data, best professional judgment prevailed.

INTENSITY, CONTEXT, DURATION, AND TYPE OF IMPACT

Terms referring to impact intensity, context and duration are used in the effects analysis. Unless otherwise stated, the standard definitions are as follows:

Negligible impacts: The impact is at the lower level of detection; there would be no measurable change.

Minor impacts: The impact is slight but detectable; there would be a small change.

Moderate impacts: The impact is readily apparent; there would be a measurable change that could result in a small but permanent change.

Major impacts: The impact is severe; there would be a highly noticeable, permanent, measurable change.

Localized Impact: The impact occurs in a specific site or area. When comparing changes to existing conditions, the impacts are detectable only in the localized area.

Short-term Effect: The effect occurs only during or immediately after implementation of the alternative.

Long-term Effect: The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more and could be beneficial or adverse.

Direct Effect: The effect is caused by the action and occurs at the same time and place.

Indirect Effect: The effect is caused by the action and may occur later in time or be farther removed in distance, but is still reasonably foreseeable.

Impacts can be beneficial or adverse. Beneficial impacts would improve resource conditions, while adverse impacts would deplete or negatively alter resource conditions.

IMPAIRMENT ANALYSIS

In addition to determining the environmental consequences of the alternatives, NPS Management Policies (2006) require the analysis of potential effects to determine if actions would impair park resources. Under the NPS Organic Act and the General Authorities Act, as amended, the NPS may not allow the impairment of park resources and values except as authorized specifically by Congress. The NPS must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment to the affected resources and values.

Impairment to park resources and values has been analyzed within this document. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is necessary to fulfill specific purposes identified in the enabling legislation or proclamation of the park; is the key to the cultural or natural integrity of the park or to opportunities for enjoyment of the park; or is identified as a goal in the park's general management plan or other relevant NPS planning document. An impact would be less likely to constitute an impairment to the extent that it is an unavoidable result, which cannot be reasonably further mitigated, of an action necessary to preserve or restore the integrity of park resources or values. In this Environmental Consequences section, a determination on impairment is made in the conclusion statement of each cultural and natural resource impact topic for each alternative; impairment is not assessed for public safety, operations, socioeconomics and other non-resource topics.

UNACCEPTABLE IMPACTS

The impact threshold at which impairment occurs is not always readily apparent; therefore, the NPS will apply a standard that offers greater assurance that impairment will not occur. NPS Management Policies 2006 (1.4.7.1) require that park managers evaluate existing or proposed uses and determine whether the associated impacts on park resources and values are acceptable.

Unacceptable impacts are impacts that fall short of impairment, but are still not acceptable within a particular park's environment.

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. For the purposes of this analysis, an unacceptable impact is an impact that individually or cumulatively would:

- Be inconsistent with a park's purposes or values;
- Impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- Create an unsafe or unhealthful environment for visitors or employees;
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values; or,
- Unreasonably interfere with:
 - Park programs or activities;
 - An appropriate use;
 - The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; or,
 - NPS concessionaire or contractor operations or services.

A determination of unacceptable impacts is made in the conclusion statement of all impact topics for the proposed action and no action alternative.

CRITERIA AND THRESHOLDS FOR IMPACTS ANALYSIS

The following are laws, regulations, and/ or guidance that relate to the evaluation of each impact topic. Thresholds of change for the intensity of an impact are provided to help the decision maker (the NPS) and the public fully understand the extent of impacts.

Air Quality

The Clean Air Act is the primary regulation for air quality relevant to this EA. The Clark County Air Quality and Department of Environmental Management also issues dust control permits for construction activities.

Impact Indicators, Criteria, and Methodology: Information from literature was used to assess the probable impacts to air quality. The thresholds of change for the intensity of an impact to air quality are defined as follows:

Negligible impacts: Dust from construction activities can be controlled by mitigation. There is no smell of exhaust and no visible smoke.

Minor impacts: Dust from construction activities is visible for brief periods and only during the work period, but most can be controlled by mitigation. There may be a slight smell of exhaust, and smoke may be visible for brief periods of time.

Moderate impacts: Dust from construction activities is visible for an extended area for an extended period, but is reduced by mitigation. Smoke and exhaust fumes are detectable in high-use areas.

Major impacts: Dust from construction activities is visible for an extended area for an extended amount of time, and mitigation is unable to alleviate the conditions. Smoke and exhaust fumes are easily detectable for extended periods of time in a large area.

Impairment: Appropriate conclusion when impacts: have a major, adverse effect on park resources and values; contributes to the deterioration of the park's air quality to the extent that the park's purpose cannot be fulfilled as established in its enabling legislation; affects resources key to the park's natural and cultural integrity or opportunities for enjoyment; and/or affects the resource whose conservation is identified as a goal in the park's general management plan or other planning documents.

Geology and Soils

Impact Indicators, Criteria, and Methodology: Information from literature searches and field confirmation was used to assess probable impacts to soils. The thresholds of change for the intensity of an impact to soils are defined as follows:

Negligible impacts: Impacts have no measurable or perceptible changes in soil structure and occur in a relatively small area.

Minor impacts: Impacts are measurable or perceptible, but localized in a relatively small area. The overall soil structure would not be affected.

Moderate impacts: Impacts would be localized and small in size, but would cause a permanent change in the soil structure in that particular area.

Major impacts: Impact to the soil structure would be substantial, highly noticeable, and permanent.

Impairment: For this analysis, impairment is considered a permanent change in a large portion of the overall acreage of the park, affecting the resource to the point that the park's purpose could not be fulfilled and the resource would be degraded, precluding the enjoyment of future generations. The impact would contribute substantially to the deterioration of the park's soils.

Water Resources

Section 404 of the Clean Water Act is the primary regulation for water resources relevant to this EA. The Nevada Department of Environmental Protection also regulates construction activities in water bodies, as well as stormwater runoff from construction activities.

Impact Indicators, Criteria, and Methodology: The thresholds of change for the intensity of an impact to water quality are defined as follows:

Negligible impacts: Impacts are not detectable, are well within Clean Water Act standards and/or historical ambient or desired water quality conditions, and have no principal effect on aquatic resources and systems.

Minor impacts: Impacts are detectable, but well within water quality standards and/or historical ambient or desired water quality conditions; impacts are not expected to have an overall effect on aquatic community structure.

Moderate impacts: Impacts are detectable, within water quality standards, but historical baseline or desired water quality conditions are being altered on a short-term basis; impacts could have an appreciable effect on individual species dynamics, community ecology, or natural aquatic processes.

Major impacts: Impacts are detectable and significantly and persistently alter historical baseline or desired water quality conditions. Water quality standards are locally approached, equaled, or slightly singularly exceeded on a short-term and temporary basis; impacts have a substantial effect on individual species, community ecology, or natural aquatic processes.

Impairment: Impacts are effects that alter baseline or desired water quality conditions on a long-term basis. Water quality standards are exceeded several times on a short-term and temporary basis. Impacts result in the deterioration of water quality to the extent that the park's aquatic life and habitat no longer function as a natural system. Water quality impairment can affect other aspects of the natural environment dependent on the condition of this resource. Aquatic life is affected over the long-term to the point that the park's purpose could not be fulfilled and the resource could not be experienced and enjoyed by future generations.

Vegetation

Impact Indicators, Criteria, and Methodology: The impacts to vegetation were evaluated in terms of impacts to native vegetation and non-native vegetation in accordance with NPS Management Policies. The thresholds of change for the intensity of an impact to vegetation are defined as follows:

Negligible impacts: Impacts have no measurable or perceptible changes in plant community size, integrity, or continuity.

Minor impacts: Impacts are measurable or perceptible and localized within a relatively small area. The overall viability of the plant community would not be affected and, if left alone, would recover.

Moderate impacts: Impacts would cause a change in the plant community (e.g. abundance, distribution, quantity, or quality); however, the impact would remain localized.

Major impacts: Impacts to the plant community would be substantial, highly noticeable, and permanent.

Impairment: For this analysis, impairment is considered a permanent change in a large portion of the overall acreage of the park, affecting the resource to the point that the park's purpose could not be fulfilled and the resource would be degraded, precluding the enjoyment of future generations. The impact would contribute substantially to the deterioration of the park's native vegetation.

Wildlife

The NPS Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the NPS to mean native animal life should be protected and perpetuated as part of the recreation area's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible. The restoration of native species is a high priority. Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and ecological integrity of plants and animals.

The NPS also manages and monitors wildlife cooperatively with NDOW.

Impact Indicators, Criteria, and Methodology: The impacts of wildlife were evaluated in terms of impacts to individual animals and wildlife habitat. Specific localized impacts were estimated based on knowledge of the project area and knowledge garnered from similar past activities. The thresholds of change for the intensity of an impact to wildlife are defined as follows:

Negligible impacts: No species of concern is present; no impacts or impacts with only temporary effects are expected.

Minor impacts: Non-breeding animals of concern are present, but only in low numbers. Habitat is not critical for survival; other habitat is available nearby. Occasional flight responses by wildlife are expected, but without interference with feeding, reproduction, or other activities necessary for survival.

Moderate impacts: Breeding animals of concern are present; animals are present during particularly vulnerable life stages, such as migration or winter; mortality or interference with activities necessary for survival is expected on an occasional basis, but not expected to threaten the continued existence of the species in the park.

Major impacts: Breeding animals are present in relatively high numbers, and/or wildlife is present during particularly vulnerable life stages. Habitat targeted by actions has a history of use by wildlife during critical periods, but there is suitable habitat for use nearby. A few incidents of mortality could occur, but the continued survival of the species is not at risk.

Impairment: The impact would contribute substantially to the deterioration of natural resources to the extent that the park's wildlife and habitat would no longer function as a natural system. Wildlife and its habitat would be affected over the long term to the point that the park's purpose could not be fulfilled and the resource could not be experienced and enjoyed by future generations.

Special Status Species

Consideration of special status species, in addition to listed species, can assist conservation efforts and may prevent the need for future listings. The primary regulations pertinent to special status species for purposes of this EA include Section 7 of the Endangered Species Act and the Migratory Bird Act. The Endangered Species Act defines the terminology used to assess impacts to listed species as follows:

Impact Indicators, Criteria, and Methodology:

Negligible impacts (No effect): The appropriate conclusion when the action agency determines that the proposed action would not affect a listed species or designated critical habitat.

Minor impacts (Is not likely to adversely affect): The appropriate conclusion when the effects on listed species are expected to be discountable, insignificant, or beneficial. Discountable effects are those extremely unlikely to occur. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Beneficial effects are contemporaneous positive effects without any adverse effects to the species.

Moderate to Major impacts (Is likely to adversely affect): The appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, then the proposed action "is likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, an "is likely to adversely affect" determination should be made.

Impairment (Is likely to jeopardize proposed species/adversely modify proposed critical habitat): The appropriate conclusion when the action agency or the USFWS identify situations in which the proposed action is likely to jeopardize the continued existence of a proposed species or adversely modify the proposed critical habitat.

Cultural Resources

Numerous legislative acts, regulations, and NPS policies provide direction for the protection, preservation, and management of cultural resources on public lands. Applicable laws and regulations include the NPS Organic Act (1916), the Antiquities Act of 1906, the NHPA of 1966 (1992, as amended), the NEPA of 1969, the National Parks and Recreation Act of 1978, the Archaeological Resources Protection Act of 1979, the NAGPRA of 1990, and the Curation of Federally Owned and Administered Archeological Collections (1991).

The NHPA of 1966 (16 USC 470, et seq.) requires in section 106 that federal agencies with direct or indirect jurisdiction over undertakings take into account the effect of those undertakings on properties that are listed on, or eligible for listing on, the NRHP. Section 110 of the act further requires federal land managers to establish programs in consultation with the State Historic Preservation Office to identify, evaluate, and nominate properties to the NRHP. This act applies to all federal undertakings or projects requiring federal funds or permits.

Impact Indicators, Criteria, and Methodology: The inventory of archaeological resources for Lake Mead is largely incomplete. For purposes of assessing impacts, all unrecorded sites are considered potentially eligible for listing on the NRHP.

Under section 106, only historic resources that are eligible or are listed on the NRHP are considered for impacts. An impact, or effect, to a property occurs if a proposed action would alter in any way the characteristics that qualify it for inclusion on the register. If the proposed action would diminish the integrity of any of these characteristics, it is considered to be an adverse effect.

The thresholds of change for the intensity of an impact to cultural resources are defined as follows:

Negligible impacts: No potentially eligible or listed properties are present; no direct or indirect impacts.

Minor impacts: Potentially eligible or listed properties are present; no direct impacts or impacts with only temporary effects are expected.

Moderate impacts: Potentially eligible or listed properties are present; indirect impacts or, in the case of structures, activity is limited to rehabilitation conducted in a manner that preserves the historical and architectural value of the property.

Major impacts: Potentially eligible or listed properties are present; direct impacts including physical destruction, damage, or alternation of all or part of a property. Isolation of a property from or alteration of the character of a property's setting when that character contributes to its eligibility, including removal from its historic location. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting. Neglect of a property resulting in its deterioration or destruction (36 CFR 800.5).

Impairment: Loss, destruction, or degradation of a cultural property, resource, or value to the point that it negatively affects the park's purpose and visitor experience.

Socioeconomics

Socioeconomics looks at demographic and employment measures because they are the key indicators for housing demand, educational requirements, and infrastructure needs.

Impact Indicators, Criteria, and Methodology: The impacts to socioeconomics were evaluated based on impacts to population demographics, employment opportunities, housing demand, and construction of new housing within the planning area. Specific impacts were estimated based on recent census data and knowledge garnered from similar past actions in other locations.

The thresholds of change for the intensity of an impact to Socioeconomics/Environmental Justice are defined as follows:

Negligible impacts: The impact is at the lower level of detection; there would be no changes in population, employment opportunities, housing demand, or construction of new housing within the project area.

Minor impacts: The impact is slight but detectable; there would be small, temporary impacts to population, employment opportunities, and housing demand or construction of new housing.

Moderate impacts: The impact is readily apparent; there would be small but permanent impacts to population, employment opportunities, and housing demand and construction of new housing.

Major impacts: The impact is severe; there would be highly noticeable, permanent impacts to population, employment opportunities, and housing demand and construction of new housing.

Transportation

Impact Indicators, Criteria, and Methodology: The impacts to transportation were evaluated based on impacts to motorized vehicle travel through the project area. Specific impacts to travel were estimated based on knowledge of the project area and knowledge garnered from similar past actions in other locations.

The thresholds of change for the intensity of an impact to transportation are defined as follows:

Negligible impacts: The impact is at the lower level of detection; there would be no measurable change in traffic density, delays, stops, and overall travel time.

Minor impacts: The impact is slight but detectable; there would be a small temporary change in traffic density, delays, stops, and overall travel time. Traffic patterns would return to pre-construction levels once the action is completed.

Moderate impacts: The impact is readily apparent; there would be a small but permanent change in traffic density, delays, stops, and overall travel time.

Major impacts: The impact is severe; there would be highly noticeable, permanent measurable increases in traffic density, delays, stops, and overall travel time.

Impacts to the soundscape, visual resources, land use, recreation, and park operations were analyzed using the best available information and best professional judgment.

CUMULATIVE EFFECTS

Cumulative effects are the direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action (40 CFR Part 1508.7). Guidance for implementing NEPA (Public Law 91-190, 1970) requires that federal agencies identify the temporal and geographic boundaries within which they will evaluate potential cumulative effects of an action and the specific past, present, and reasonably foreseeable projects that will be analyzed. This includes potential actions within and outside the project area boundary. The geographical boundaries of analysis vary depending on the impact topic and potential effects. While this information may be inexact at this time, major sources of impacts have been assessed as accurately and completely as possible using available data.

Specific projects or ongoing activities with the potential to cumulatively affect the resources (impact topics) evaluated for the project are identified in this document and described in the following narrative. Some impact topics would be affected by several or all of the described activities, while others could be affected very little or not at all. How the proposed action would incrementally contribute to potential impacts for a resource is included in the cumulative effects discussion for each impact topic.

Resources in the project area have been previously impacted primarily from private development. An additional 5,000 people are projected to move to Lower Moapa Valley by 2020 (USCB 2000). This growth is expected to result in increased residential development on private lands in Lower Moapa Valley. Plans for new private development are in place in Logandale, and Overton. Other projects expected to occur in the project area in the near future include construction of the Gubler Bridge to replace the existing Gubler crossing and expansion of the existing Water Resources Center at Lewis Avenue.

4.1 AIR QUALITY

4.1.1 PROPOSED ACTION

4.1.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

An increase in the number of motorized construction vehicles, the time of operation, and soil disturbing activities, such as trenching and road grading, associated with the proposed action would generate short-term increases in CO and PM10 emissions in the project area. Increases would occur only during construction activities and would be localized to the construction zone. The construction activities that would cause these effects would last for no more than twelve months.

Indirect Impacts

An increase in standing traffic as a result of construction activities on state highway 169 would result in periodic short-term increases in CO in the project area. Traffic increases would occur during commuting times in the morning and evening, and at times of increased tourist traffic (weekends and holidays). The construction activities that would cause these effects would last for no more than twelve months.

4.1.1.2 CUMULATIVE IMPACTS

Air quality around Lower Moapa Valley is affected by a variety of internal and external sources, including power plants, motor vehicle and vessel emissions, dust from construction, and the use of back country roads. Air quality in the project area is generally good. An increase in the capacity of the improved collection system would facilitate continued population growth in Lower Moapa Valley. An additional 5,000 people are projected to move to Lower Moapa Valley by 2020 (USCB 2000). The projected increase in population is likely to lead to increased motorized vehicles and CO emissions. This project would not add to long-term impacts to air quality in the region.

4.1.1.3 CONCLUSION

There would be minor, adverse, localized impacts to air quality during construction activities. No unacceptable impacts or impairment to air quality would occur from implementation of this alternative.

4.1.2 NO ACTION ALTERNATIVE

The no action alternative would result in no change and no impacts to air quality in the project area, since no new collection system would be built under this alternative.

4.1.2.1 CONCLUSION

There would be no new impacts to air quality from the no action alternative. Under the no action alternative, no long-term impacts to air quality would occur. There would be no unacceptable impacts or impairment to air quality under the no action alternative.

4.2 GEOLOGY AND SOILS

4.2.1 PROPOSED ACTION

4.2.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

With the implementation of the proposed action, soil and soil stability will experience some minor disturbance. Soil compaction would likely occur as heavy construction equipment maneuvers over the area. It will be necessary to perform digging and grading to implement the proposed action. This will require some moving of the earth and a change of existing topography. Any soil removed to dig trenches would be stockpiled at the temporary laydown sites at the Clark County Fairgrounds, and the Lewis Lift Station. After positioning the wastewater pipeline and force main, trenches would be backfilled with new digable concrete material or soil covering the pipelines with over 12 inches of material. Any excavated soil that meets construction requirements would be put on top. All leftover excavated soil would be removed from the site by the contractor. Temporary construction cut areas would be re-contoured to simulate the site's previous grade configuration after pipeline construction is completed. Erosion would cause a permanent, minor impact to the geology and soils within the project area. Soil loss may occur due to wind erosion as construction equipment is used to dig in the project area and drive on unpaved surfaces. Additional wind erosion may occur from the stockpile of soil taken from trenches. Soil loss from water erosion may also occur in these areas. Soil disturbances in riparian areas would cause increased soil destabilization and erosion during rain events.

In all, the proposed action could impact up to 5.6 acres of previously disturbed soils across the Overton City Park, and Lewis Avenue. Additionally, no more than 1 acre of this impact would be permanent. Permanent disturbances would be associated with the bore holes for tunneling, valve boxes, fiber optic boxes, and the new Lewis lift station. Temporary disturbances would occur where the sewer line will cross Overton City Park, and along Lewis Avenue at the temporary laydown area and where the force mains would be installed. Due to the localized area of impact and the commonality of the soils and geology in the area, it is anticipated that impacts to geology and soils would be minor. The implementation of mitigation measures would further reduce impacts to soils and geology to insignificant levels.

Indirect Impacts

There would be no indirect impacts to geology or soils from the proposed action.

4.2.1.2 CUMULATIVE IMPACTS

The proposed action would occur in an area already developed and along existing disturbance. This project would add new permanent disturbance of no more than 1 acre. Geology and soils around Lower Moapa Valley are affected by a variety of sources, including new development and OHV operation. This project would not add to cumulative effects to geology and soils in the region.

4.2.1.3 CONCLUSION

There would be minor, short-term impacts to geology and soils during construction activities. No unacceptable impacts or impairment to geology or soils would occur from implementation of this alternative.

4.2.2 NO ACTION ALTERNATIVE

With the selection of the no action alternative, geology and soil conditions would continue to follow current regional trends and erosion of geology and soils would be very minimal. Under this alternative, mitigation measures would not be required.

4.2.2.1 CONCLUSION

There would be moderate impacts to soils from the no action alternative. Under the no action alternative, nitrate levels are likely to continue to rise contributing to long-term impacts to geology and soils. There would be no unacceptable impacts or impairment to geology and soils under the no action alternative. NDEP might consider the rise of nitrates as unacceptable.

4.3 HYDROLOGY

4.3.1 PROPOSED ACTION

4.3.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Because the proposed pipeline will use existing facilities (Gubler Bridge), be suspended above the Muddy River (Yamashita Crossing), or be drilled beneath the River (Lewis Avenue Crossing), direct impacts to the Muddy River will be negligible. There is one ephemeral wash crossing (0.01 acre) along Lewis Avenue that will likely be directly impacted upon implementation of the proposed action. Soil disturbing construction activities, such as grading at Lewis Avenue, would lead to increased erosion and soil deposition. Construction activities are local and would only occur in the short term, as the wash would be graded to match its natural condition following placement of the wastewater pipeline.

New developments in Lower Moapa Valley would be required to be connected to the wastewater collection system. This would eliminate the introduction of new septic systems that could contribute to further nitrate saturation.

Indirect Impacts

It is expected that heavy construction equipment will increase the potential for erosion adjacent to the Muddy River. This could lead to increased soil deposition in the Muddy River, thereby decreasing water quality. There may also be short-term use of water for dust suppression during construction, which could also increase erosion and soil deposition in the Muddy River.

As current residents change from the use of older septic systems to the new collection system, there is likely to be a decrease in nitrate saturation of groundwater and soils in Lower Moapa Valley having a long term beneficial impact to groundwater resources.

4.3.1.2 CUMULATIVE IMPACTS

Existing septic systems in Lower Moapa Valley continue to affect water quality. Water quality in the project area is generally below standard due to high nitrate levels from the large number of out-of-date septic systems. Because new developments in Moapa Valley will be required to connect to the new collection system, this project is likely to have long-term beneficial impacts to water quality in the region.

4.3.1.3 CONCLUSION

There would be minor, localized, short-term adverse impacts to water quality during and immediately following construction activities. There would be moderate long-term beneficial impacts to hydrology and water quality from implementation of the proposed action. No unacceptable impacts or impairment to hydrology would occur from implementation of this alternative.

4.3.2 NO ACTION ALTERNATIVE

The no action alternative would result in hydrology and water resources remaining in their present state, and subject to existing trends and conditions. This is likely to result in increasing nitrate saturation and adverse impacts to groundwater resources

4.2.2.1 CONCLUSION

There would be no new impacts to hydrology and water resources from the no action alternative. Under the no action alternative, long-term impacts to hydrology and water resources would occur from the continued use of existing septic systems. There would be no unacceptable impacts or impairment to hydrology and water resources under the no action alternative.

4.4 WETLAND/RIPARIAN

4.4.1 PROPOSED ACTION

4.4.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Minor, temporary direct impacts to wetland/riparian resources resulting from the proposed action would occur within the project area. Several saltcedars along Lewis Avenue would be removed. There are two other crossings of the Muddy River at the Gubler Bridge and the Yamashita Bridge. The connection points for the Gubler Bridge crossing occur above the river banks, outside of both wetland and riparian areas. During the installation of the sewer pipe along the Yamashita Bridge, temporary crushing of riparian resources would result from construction machinery crossing the Muddy River. Temporary crushing would occur on no more than 0.10 acres.

Indirect Impacts

No indirect impacts to wetland/riparian resources would occur as a result of the proposed action.

4.4.1.2 CUMULATIVE IMPACTS

Wetland and riparian resources have been permanently altered by development throughout the Lower Moapa Valley. Construction associated with the proposed action would occur in a developed area, along existing disturbance. A majority of construction associated with this project would not occur near wetland/riparian resources. Short term minor impacts to wetland/riparian resources would occur. Future actions that may contribute to impacts to wetland/riparian resources include expansion of the water resource center at Lewis Avenue, construction of the Gubler Bridge, and additional private development. The proposed action would not appreciably add to the cumulative impacts to wetland/riparian resources.

4.4.1.3 CONCLUSION

There would be short term minor impacts to wetland/riparian resources during construction activities at the Yamashita Bridge. No unacceptable impacts or impairment to wetland/riparian vegetation communities would occur from implementation of this alternative

4.4.2 NO ACTION ALTERNATIVE

With selection of the no action alternative, wetland/riparian resources within the project area would remain in their current state and would be subject to current trends and conditions. No mitigation would be required under this alternative.

4.4.2.1 CONCLUSION

There would be no new impacts to wetland/riparian resources from the no action alternative. Under the no action alternative, no long-term impacts to wetland/riparian resources would occur. There would be no unacceptable impacts or impairment to wetland/riparian resources under the no action alternative.

4.5 VEGETATION

4.5.1 PROPOSED ACTION

4.5.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

General Vegetation

Up to 5.6 acres of vegetation on previously disturbed land along Lewis Avenue would be removed by construction activities associated with the proposed action. Removed vegetation would include 2.0 acres of creosote community, 2.7 acres of saltcedar community 0.8 acres of saltbush community, and 0.1 acres of desert wash community. However, much of these communities along Lewis Avenue are currently disturbed and include a large number of invasive species or no vegetation at all. No more than 1 acre total along Lewis Avenue would be permanently disturbed by the proposed action. Permanent disturbances would be associated with

installation of the new Lewis lift station, bore holes for tunneling, valve boxes, and fiber optic boxes. Implementation of best management practices described in the Mitigation section would facilitate the recovery for temporarily disturbed vegetation communities. Overall, the disturbance to the vegetation communities in the project area would be minimal considering the current conditions of the area and the abundance of these communities in the region.

Invasive Species

Invasive species are currently established in the project area. Any type of ground disturbing activity creates additional opportunities for invasive species to become established. Seeds from invasive species can be dispersed by construction equipment. Implementation of best management practices described in the Mitigation section would reduce the likelihood of spreading or establishing new populations of invasive species within the project area.

Indirect Impacts

General Vegetation

No indirect impacts to general vegetation are expected as a result of the proposed action.

Invasive Species

No indirect impacts to invasive species are expected as a result of the proposed action.

4.5.1.2 CUMULATIVE IMPACTS

This proposed action is in a developed area, along existing disturbance. Vegetation resources within Lower Moapa Valley are affected by a variety of sources, including new development and OHV operations. This project would not add to long-term impacts to vegetation in the region.

4.5.1.3 CONCLUSION

There would be minor, adverse, localized impacts to vegetation resources during construction activities. No unacceptable impacts or impairment to vegetation resources would occur from implementation of this alternative.

4.5.2 NO ACTION ALTERNATIVE

General Vegetation

With selection of the no action alternative, the amount and type of general vegetation would remain unchanged in the project area. No mitigation would be required.

Noxious Weeds

With selection of the no action alternative, the amount and type of invasive species would remain unchanged in the project area. No mitigation would be required.

4.2.2.1 CONCLUSION

There would be no new impacts to vegetation from the no action alternative. Under the no action alternative, no long-term impacts to vegetation would occur from the continued use of existing septic systems. There would be no unacceptable impacts or impairment to vegetation under the no action alternative.

4.6 WILDLIFE

4.6.1 PROPOSED ACTION

4.6.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

The temporary and permanent removal of vegetation and potential wildlife habitat for small mammals, reptiles, and birds would result from construction activities associated with the proposed action. No more than 4.6 acres of vegetation and wildlife habitat would be temporarily impacted during construction activities associated with the proposed action. No more than 1 acre of vegetation and wildlife habitat would be permanently impacted by the proposed action.

Construction activities and increased vehicular traffic throughout the project area would also result in direct mortality of individual animals and crushing of animal burrows in the project area. Wildlife that would typically be affected by these actions includes small, less mobile ground dwelling mammals and reptiles. Larger, more mobile animals would be temporarily displaced as a result of construction activities and noise. Individual birds would also be temporarily displaced because of construction activity, human presence, and noise. Such disturbance has the potential to inhibit foraging practices by raptors and nesting activities. Actions leading to these effects would last no more than twelve months.

Indirect Impacts

Completion of the proposed action would allow for increased development and population growth in Lower Moapa Valley. Future private development would lead to further displacement of more mobile, larger mammals, and further loss of potential wildlife habitat for small mammals, reptiles, and birds.

4.6.1.2 CUMULATIVE IMPACTS

Wildlife habitat within Lower Moapa Valley has been permanently altered by previous development actions. The area continues to support some wildlife such as small mammals, reptiles, and birds. The proposed action would result in the temporary displacement of some individual animals but would not add to the cumulative loss of habitat.

4.6.1.3 CONCLUSION

Selection of the proposed action would result in minor impacts to wildlife. No unacceptable impacts or impairment to wildlife would occur from implementation of this alternative.

4.6.2 NO ACTION ALTERNATIVE

By choosing the no action alternative, there would be no impacts to wildlife within the project area. No mitigation would be required.

4.2.2.1 CONCLUSION

There would be no new impacts to wildlife from the no action alternative. Under the no action alternative, no long-term impacts to wildlife would occur from the continued use of existing septic systems. There would be no unacceptable impacts or impairment to wildlife under the no action alternative.

4.7 SPECIAL STATUS SPECIES

4.7.1 PROPOSED ACTION

4.7.1.1 ENVIRONMENTAL CONSEQUENCES

4.7.1.1.1 T/E Species

Direct Impacts

Development of the Lower Moapa Valley Collection System would result in the temporary disturbance of approximately 2.4 acres of marginal desert tortoise habitat. Permanent disturbance would be limited to less than one acre associated with bore pits, valve boxes, and fiber optic boxes. Construction disturbance will be limited to a small area relative to available habitat and the construction timeframe is expected to be relatively short. Construction activities associated with the project would occur in habitat not utilized by desert tortoise. No tortoises were found in the project area. Because of low density and with the application of mitigation measures no direct impacts to desert tortoise are likely to occur from completion of the project.

No direct impacts are expected for the Southwestern willow flycatcher as no individual birds were seen and only marginal habitat exists for the bird.

Indirect Impacts

Indirect impacts to desert tortoises may occur primarily from increased noise from construction and vehicles. Such noise has the potential to disturb and ultimately displace tortoises. However, this would be a temporary impact, as these individuals would likely return to their original habitat following the completion of construction activities.

Temporary disturbance might occur to the Southwestern willow flycatcher due to increased construction activity and noise. However, because no individual birds were seen and only marginal habitat existed for the flycatcher, no other potential impacts to Southwestern willow flycatcher are anticipated due to construction of the proposed sewer collection system.

4.7.1.1.2 Sensitive Species

Direct Impacts

Sensitive bird species may be disturbed and displaced due to increased construction activities. However, no other direct impacts are expected to these species as a result of construction of the proposed sewer collection system.

The Virgin River chub may be impacted by increased silt input into the Muddy River as a result of activities associated with the collection system construction. Increased silt input would be temporary and would be reduced or eliminated by implementation of the stormwater pollution prevention plan.

Because there is no potential habitat in the project area, no direct impacts are expected for the threecorner milkvetch as a result of construction activities associated with the wastewater collection system.

Indirect Impacts

Indirect impacts to sensitive species may occur from increased noise from construction and additional vehicles in the project area. This noise would be temporary and last no more than twelve months.

4.7.1.1.3 Migratory Birds

Direct Impacts

Migratory birds within the project area would likely be displaced due to construction activity and movement. However, this would be temporary and such species would likely return to the area once construction activities end.

There is also potential for nesting and foraging activities of these birds to be disturbed due to construction noise and traffic. However, this potential problem should be reduced or eliminated by implementation of mitigation measures.

Indirect Impacts

Indirect impacts to migratory birds may occur from increased noise from construction and additional vehicles in the project area. Such noise would be temporary and last no more than twelve months.

4.7.1.2 CUMULATIVE IMPACTS

This project and most projects in southern Nevada occur in typical Mojave creosote bush habitat that supports or could support desert tortoise. Cumulative impacts to desert tortoise from this project and other reasonably foreseeable projects that occur in those areas are potentially high. As growth in the area continues at high rates and associated recreation, grazing, and other land uses continue to rise, desert tortoises are killed, the available habitat for desert tortoises is reduced, and indirect impacts from noise, pollution, and general ecosystem alteration increase. However, the Clark County Desert Conservation Plan includes provisions that have set aside several contiguous pieces of land outside of urban areas that are seemingly large enough to sustain a healthy desert tortoise population in southern Nevada. Presumably, the cumulative impact would not jeopardize the continued existence of the species.

4.7.1.3 CONCLUSION

4.7.1.3.1 Threatened and Endangered Species

Construction activities associated with the proposed collection system **may affect, but is not likely to adversely affect** the desert tortoise.

Because of potential nesting habitat in the project area, construction activities associated with the proposed collection system **may affect, but are not likely to adversely affect** the Southwestern willow flycatcher. No unacceptable impacts or impairment to desert tortoise or Southwestern willow flycatcher would occur from implementation of this alternative.

4.7.1.3.2 Sensitive Species

Because of the implications of the proposed action on these sensitive species, there would be minor impacts to sensitive species as a result of construction of the proposed collection system. No unacceptable impacts or impairment to sensitive species would occur from implementation of this alternative.

4.7.1.3.3 Migratory Birds

Because of the potential for construction activities to disturb these birds during vulnerable life stages, the proposed collection system would have minor impacts on migratory bird species. No unacceptable impacts or impairment to migratory birds would occur from implementation of this alternative.

4.7.2 NO ACTION ALTERNATIVE

By selecting the no action alternative, there would be no impact on federally listed species, BLM-listed sensitive species, or migratory birds within the project area. Thus, no mitigation measures would be necessary.

4.2.2.1 CONCLUSION

There would be no new impacts to special status species from the no action alternative. Under the no action alternative, no long-term impacts to special status species would occur from the continued use of existing septic systems. There would be no unacceptable impacts or impairment to special status species under the no action alternative.

4.8 CULTURAL RESOURCES

4.8.1 PROPOSED ACTION

4.8.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

No cultural resources are located within the APE. Because there are no identified archaeological sites in the APE, no direct impacts to archaeological resources are anticipated as a result of the proposed action. Potential direct impacts to archaeological sites include damage to subsurface components of undocumented sites by earth moving activities during construction.

Indirect Impacts

Because there are no cultural resources identified within the APE, no indirect impacts to archaeological resources are anticipated as a result of the proposed action.

4.8.1.2 CUMULATIVE IMPACTS

Because there are no cultural resources identified in the APE, there would be no cumulative effects to cultural resources as a result of the proposed action.

4.8.1.3 CONCLUSION

There would be negligible impacts to cultural resources during construction activities. No unacceptable impacts or impairment to cultural resources would occur from implementation of this alternative.

4.8.2 NO ACTION ALTERNATIVE

There would be no impact to cultural resources from implementation of the no action alternative.

4.2.2.1 CONCLUSION

There would be no new impacts to cultural resources from the no action alternative. Under the no action alternative, no long-term impacts to cultural resources would occur from the continued use of existing septic systems. There would be no unacceptable impacts or impairment to cultural resources under the no action alternative.

4.9 SOUNDSCAPES

4.9.1 PROPOSED ACTION

4.9.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Construction activities related to the new collection system would result in short-term increases in noise in the construction area. The level of noise would vary, depending on the types of equipment in use, the distance to noise-sensitive receptors, and the movement of equipment around the project area. For the duration of the project, no longer than twelve months, with work days occurring from 7 a.m. to 7 p.m. seven days a week, noise levels at the site of construction in the project area are expected to be above the average noise level defined by the EPA. The EPA identifies a 24-hour exposure level of 70 decibels as the level of environmental noise that will prevent any measurable hearing loss over a lifetime (EPA 1974). Table 6 contains the typical noise levels from construction equipment likely to be used during the proposed action:

Additionally, noise from the larger capacity lift station at Lewis Avenue would lead to adverse impacts to noise-sensitive receptors in the immediate vicinity of the lift station.

Indirect Impacts

There would be no indirect impacts to the existing soundscape in the project area from the proposed action.

Table 5. Noise Levels of Construction Equipment

Equipment	Typical dBA 50 feet from source
Backhoe	80
Compacter	82
Dozer	85
Grader	85
Generator	81

Source: Federal Transit Authority (1995)

4.9.1.2 CUMULATIVE IMPACTS

Increased development in Lower Moapa Valley would lead to ongoing, increased short-term construction noise. The project would allow increased private development to occur in Lower Moapa Valley, which could increase the amount of noise generated by a larger population, and lead to more construction activity.

4.9.1.3 CONCLUSION

Under the proposed action, there would be localized short-term impacts to the noise-sensitive receptors in the project area from construction activities, and localized long-term impacts to the noise-sensitive receptors in the immediate vicinity of the Lewis lift station. There would be no unacceptable impacts and no impairment to noise-sensitive receptors in the project area from the proposed action.

4.9.2 NO ACTION ALTERNATIVE

There would be no change to the project area's existing soundscape from the no action alternative.

4.9.2.1 CONCLUSION

There would be no unacceptable impacts and no impairment to the area's soundscape from the no action alternative since no construction activities would occur.

4.10 VISUAL RESOURCES

4.10.1 PROPOSED ACTION

4.10.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

A majority of the proposed action would occur along existing roadways and through previously disturbed areas. Construction activities associated with the collection system, including trenching, temporary laydowns, bore pits, and the removal of two existing lift stations would produce a visual contrast in the foreground landscape of the project area by removing existing vegetation, excavating trenches, and the temporarily storing construction materials. These activities would last no more than 12 months, and the contrast would not be substantial.

The new Lewis Lift Station would be larger than the Overton Main Lift Station it replaces. Facilities would include a series of wet wells, a 16 foot tall building for electrical equipment, odor control facilities, backup generator, and a chain link fence with privacy slats. The fence would partially screen the facilities inside. Existing structures near the proposed lift station include two prefabricated steel buildings the same height as the proposed lift station structures, and several single family homes. Replacement of the existing lift station at Lewis Avenue with a new larger capacity lift station, construction of associated facilities with the lift station, would create moderate, long-term visual contrast to the existing landscape on no more than 1 acre within the southern portion of the project area.

Indirect Impacts

The permanent removal and clean up of the Park lift station would create localized, minor long-term beneficial impacts to visual resources in the planning area by restoring elements of the natural environment, including contour and vegetation. The location of the new Lewis lift station south of Lewis Avenue is less visually contrasting the Overton Main lift station located on Lewis Avenue. The permanent removal of the Lewis lift station will result in fewer visual contrasts to the casual viewer.

4.10.1.2 CUMULATIVE IMPACTS

The proposed project would occur along existing disturbance in a developed area. Any visual contrast associated with the new Lewis Lift Station would be moderate in nature. All other aspects of the proposed action would result in minor short term contrasts to the surrounding landscape. The project would not result in any cumulative impacts to visual resources.

4.10.1.3 CONCLUSION

Under the proposed action, minor to moderate, adverse, long-term contrasts to visual resources would occur from construction activities associated with the new collection system. A reduction in visual contrast would result from removal and clean up of the Park lift station. The proposed action meets the visual objectives of the NPS in the project area. There would be no impairment and no unacceptable impacts to visual resources from implementation of the proposed action.

4.10.2 NO ACTION ALTERNATIVE

There would be no change to project area's existing landscape from the no action alternative.

4.10.2.1 CONCLUSION

There would be no unacceptable impacts and no impairment to the area's existing landscape from the no action alternative since no construction activities would occur.

4.11 SOCIOECONOMICS

4.11.1 PROPOSED ACTION

4.11.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Construction activities associated with the proposed action would impact local residents' ability to travel through the valley. The increase in traffic delays on a daily basis would have a short term impact on local resident's quality of life. Traffic delays would occur daily for a period of no more than twelve months in localized sections of the project area.

Construction of a new modern sewer system enhances housing options in the Moapa Valley, and would reduce further nitrate saturation of soil and groundwater, resulting in enhanced environmental conditions and quality of life for residents.

Indirect Impacts

The increased capacity of the collection system associated with the proposed action would accommodate projected future increases in population and housing in Lower Moapa Valley. In addition, rate increases would have adverse impacts on current residents wishing to connect to the new collection system. The yearly assessment will increase from \$194.96 to \$400.00 in the first year, with a 5% increase every following year topping out at \$823/year in 2025. These fees are only assessed to those connected to the system. (Meeting Minutes, MVTAB, January, 2007)

4.11.1.2 CUMULATIVE IMPACTS

Completion of the proposed project would add to cumulative beneficial impacts by providing temporary construction-related jobs, and by creating better housing options in Lower Moapa Valley.

4.11.1.3 CONCLUSION

Under the proposed action, minor, short-term impacts to quality of life and socioeconomic conditions within the project area may occur as a result of implementing the proposed action. Increases in housing and population may also occur in the long term as a result of implementing the proposed action. There would be no unacceptable impacts to socioeconomics from implementation of the proposed action.

4.11.2 NO ACTION ALTERNATIVE

There would be no change to socioeconomic conditions from the no action alternative. The continued decrease in water quality from further nitrate saturation could lead to long term impacts to quality of life for current residents.

4.11.2.1 CONCLUSION

There would be no new impacts to quality of life and socioeconomic conditions within the project area from the no action alternative. Under the no action alternative, no long-term impacts

to socioeconomic conditions would occur. There would be no unacceptable impacts to socioeconomic conditions under the no action alternative.

4.12 LAND USE

4.12.1 PROPOSED ACTION

4.12.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Activities associated with the proposed action would require the existing CCWRD 40-foot (12-m) easement through NPS land immediately north of the OWMA to be increased by 60 feet (18 m) and extended into the OWMA. The easement expansion would be a total of 12 acres. The existing well and pipeline within the OWMA would be avoided during installation of the force mains. No existing uses of the area would have to be changed. Expansion of the easement would not result in any adverse impacts to land use of NPS lands or the OWMA. No other changes in land use would occur as a result of the proposed action.

Indirect Impacts

No indirect impacts to land use would occur as result of the proposed action.

4.12.1.2 CUMULATIVE IMPACTS

The proposed project would not result in a change in existing land use or ownership. There would be no cumulative impacts to land use from the proposed action.

4.12.1.3 CONCLUSION

Under the proposed action, minor impacts to land use within the Lake Mead NRA and OWMA would occur as a result of implementing the proposed action. There would be no unacceptable impacts to land use from implementation of the proposed action.

4.12.2 NO ACTION ALTERNATIVE

There would be no change to land use from the no action alternative.

4.12.2.1 CONCLUSION

There would be no new impacts to land uses within the project area from the no action alternative. Under the no action alternative, no long-term impacts to land uses would occur. There would be no unacceptable impacts to land uses under the no action alternative.

4.13 VISITOR EXPERIENCE/RECREATION

4.13.1 PROPOSED ACTION

4.13.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Construction activities associated with the proposed action would limit public access to both developed and dispersed recreational opportunities in the project area, including access to the Muddy River, and Bowman Reservoir in the short term. Visitors would experience some inconvenience by having to find alternative access points to recreation destinations along the project area's 11-mile corridor. Because the project area is removed from the main visitor entrance to the OWMA, impacts to visitor and hunter access are not anticipated. CCWRD will further coordinate with the NPS and NDOW prior to hunting season to ensure that hunter access to the OWMA is not restricted as a result of the proposed action. Construction activities would also introduce visual and audible intrusions, having an adverse impact on visitor experiences. These intrusions would be localized and would occur only in the short-term. The construction activities that would cause these effects would last for no more than twelve months.

Open trenching along the southern boundary of Overton City Park or tunneling under Overton City Park could result in temporary limited access to the park leading to short-term, adverse impacts to recreation activities at the park. Closure of the Overton City Park would not be necessary.

Indirect Impacts

The increased capacity of the collection system would facilitate continued population growth in Lower Moapa Valley. An additional 5,000 people are projected to move to Lower Moapa Valley by 2020 (USCB 2000), resulting in more people using existing recreation resources within the project area.

4.13.1.2 CUMULATIVE IMPACTS

Lower Moapa Valley is surrounded by lands with high recreation opportunities. Continued population growth is likely to lead to an increase in people participating in recreation activities surrounding the project area.

4.13.1.3 CONCLUSION

Under the proposed action, minor, adverse, short-term direct impacts to visitor experience and recreation would occur from construction activities associated with the new collection system. Upon completion of the proposed action, conditions would return to their previous level. There would be no unacceptable impacts to visitor experience and recreation from implementation of the proposed action.

4.13.2 NO ACTION ALTERNATIVE

There would be no change to visitor experience and recreation from the no action alternative.

4.13.2.1 CONCLUSION

There would be no new impacts to visitor experience and recreation within the project area from the no action alternative. Under the no action alternative, no long-term impacts to visitor experience and recreation would occur. There would be no unacceptable impacts to visitor experience and recreation under the no action alternative.

4.14 TRANSPORTATION

4.14.1 PROPOSED ACTION

4.14.1.1 ENVIRONMENTAL CONSEQUENCES

Direct Impacts

Construction activities associated with the proposed action would lead to traffic delays on state route 169. The length of delay would vary during the course of the project; however, some level of construction activity will occur every day of the week from 7 a.m. to 7 p.m., inconveniencing commuters, residents, and visitors to the area. Traffic increases would primarily occur during commuting times in the morning and evening, and at times of increased tourist traffic (i.e., weekends and holidays). The construction activities that would cause these effects would last for no more than twelve months.

Indirect Impacts

There would be a minor increase in the volume of traffic from additional construction workers. As traffic would become more congested on state route 169, it is likely that individuals would begin using alternate routes, resulting in increased traffic on smaller county-maintained roads in the project area.

4.14.1.2 CUMULATIVE IMPACTS

Population growth anticipated for Lower Moapa Valley, and potential increased private development made possible by the proposed action would result in a cumulative increase in traffic in Lower Moapa Valley. The increased capacity of the collection system would facilitate continued population growth in Lower Moapa Valley. An additional 5,000 people are projected to move to Lower Moapa Valley by 2020 (USCB 2000). Additional residents would result in moderate impacts to traffic.

4.14.1.3 CONCLUSION

Under the proposed action, minor, adverse, short-term, direct and indirect impacts to traffic would occur from delays caused by construction activities associated with the proposed action. Upon completion of the proposed action, traffic conditions would return to their previous level. There would be no unacceptable impacts to traffic conditions from implementation of the proposed action.

4.14.2 NO ACTION ALTERNATIVE

There would be no change to transportation from the no action alternative.

4.14.2.1 CONCLUSION

Under the no action alternative, no direct and indirect impacts to traffic conditions would occur. There would be no unacceptable impacts to traffic conditions from implementation of the no action alternative.

CHAPTER 5 MITIGATION MEASURES

The following mitigation measures would ensure impacts remain below levels of significance.

1. All relevant permits from the State of Nevada and Clark County should be obtained prior to construction.
2. A Worker Environmental Awareness Program (WEAP) shall be implemented for construction crews prior to the commencement of groundbreaking/excavation activities. Training materials and briefings shall include, but not be limited to, discussion of the federal ESA, the consequences of noncompliance with this act, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all required and recommended conservation measures.
3. As part of the WEAP, a desert tortoise education program shall be presented to all personnel who will be on site. All permittees and their employees shall be informed, through this education program, of the potential for occurrence of the desert tortoise in the project area and of the threatened status of the species. They shall also be advised of the definition of “take”, the potential impacts to the tortoise, and the potential penalties for taking a threatened species. All field personnel involved in the activities permitted herein shall be educated about the desert tortoise and shall be alert for the presence of wildlife, including desert tortoise. All informed persons shall sign a statement indicating that they have completed the education program and understand fully its provisions.
4. Installation of temporary tortoise-proof fencing will be done along Lewis Avenue, in areas that are classified as potential tortoise habitat. This area will be cleared by a qualified tortoise biologist no more than 24 hours prior to fence construction. A qualified tortoise biologist shall be on-site during initial blading of the fence line corridor, operation of any heavy equipment, and placement of the fence posts and wire to ensure that no tortoises are harmed. Following construction of the tortoise-proof fence and no more than 24 hours prior to commencement of surface-disturbing project activities, qualified biologists shall do a 100 percent desert tortoise clearance survey of the entire area inside the fence to ensure that no tortoises are inside the fence. All tortoise burrows or other burrows that could be occupied by a tortoise should be searched for resident tortoises. If no tortoises are discovered inside the burrow, it should be collapsed or blocked to prevent tortoise re-entry. The entire project area will be searched three times unless no tortoises are seen during the second search. The tortoise-proof fence must be monitored at least monthly and more regularly depending upon precipitation. Monitoring and maintenance shall include removal of trash and sediment accumulation and restoration of zero clearance between the ground and the bottom of the fence.
5. As an alternative to installation of tortoise-proof fencing, a qualified tortoise biologist may be located on site to monitor for desert tortoise entering the project area. One qualified tortoise biologist would be required at every location where heavy equipment is located.

6. It is not anticipated that a desert tortoise or tortoise nest would be encountered during clearance surveys or biological monitoring. However, should a desert tortoise or desert tortoise nest be found on the property during construction, all construction activities must cease immediately and a USFWS official must be contacted immediately.
7. If construction is slated to occur during the Southwestern Willow Flycatcher nesting period of June 22nd through July 17th, all five surveys, would be conducted by a qualified biologist, in accordance with the 2000 USFWS Southwestern Willow Flycatcher protocol revision. If no Southwestern Willow Flycatcher are detected during surveys, but one is observed during construction, all construction activities would cease and the USFWS will be contacted to determine appropriate actions.
8. If construction is slated exclusively outside of the Southwestern Willow Flycatcher nesting period referenced above but still falls within the general migratory bird nesting period of March 15th through August 15th, a qualified biologist will conduct one migratory bird nest survey within the project area 24 hours prior to any groundbreaking activity. If any migratory bird nest(s) are located during these surveys, a protective buffer, as determined by the USFWS, will be placed around the nest and construction will not continue within this buffer until all chicks have fledged and left the area.
9. The contractor shall implement a litter control program during construction activities that will include the use of covered, raven-proof trash receptacles, removal of trash from the construction site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility at the end of each work week. This effort will reduce the attractiveness of the area to opportunistic predators such as coyotes, kit foxes, and common ravens.
10. Install silt fence on either side of the Muddy River following NPS-approved protocol to keep additional sediment from entering the Muddy River. Silt fence should be monitored and maintained on a weekly basis to ensure it is functioning properly. If sediment is detected in the Muddy River due to silt fence malfunction, the NPS shall be contacted immediately.
11. Within the project area, control erosion and runoff using Best Management Practices (BMP) as recommended by the NPS.
12. A maximum speed limit of 15 miles per hour will be maintained while traveling in areas of groundbreaking or excavation. This effort will reduce the potential for vehicle-wildlife related collisions.
13. Any fuel or hazardous waste leaks or spills will be contained immediately and cleaned up at the time of occurrence. Contaminated soil will be removed and disposed of at an appropriate facility.
14. Appropriate dust control measures would be taken and best management practices would be followed during construction, including the regular spraying of a liquid dust suppressant on the surface of dirt, turn around areas, and rights-of-way as approved by Clark County Department of Air Quality and Environmental Management.
15. Cacti and yucca species are protected under Nevada Revised Statutes 527.060-527.120 and are required to be salvaged based upon requirements stipulated by the NPS. Salvaged plants will be used for revegetation of the project area or other disturbed areas, or sent to a NPS stockpiling facility as directed by the NPS.

16. Disturbed areas will be stabilized with appropriate treatments immediately following project facility construction until the areas can be re-vegetated, either through natural regrowth or artificially seeded with site-specific mix(es) during the next appropriate planting period (i.e. spring or fall)
17. Equipment would be free of caked mud or debris prior to entering the project site to avoid the introduction of noxious weeds. Weed monitoring would occur for species identified by the State of Nevada, as well as for additional species specified by Clark County during a given year. Such species comprise the official list of weeds for which a county may apply for cost-share funding for control and removal efforts. Should such species be found during monitoring, control and eradication efforts would be implemented following County control procedures.
18. Should previously unidentified cultural materials (artifacts, features, structures, human remains) be encountered during project activities, all operations in the immediate vicinity of the discovery would cease to protect the remains, and the NPS Authorized Officer (or his representative) for the project would be notified immediately. The NPS Authorized Officer would have 48 hours from the time of acknowledgement of the report of an unanticipated discovery to arrange an on-site inspection with the project Proponent and make a determination in consultation with the project Proponent of measures to be taken to protect the discovery in-place, recover the data, or allow the project to proceed.
19. A Stormwater Pollution Prevention Plan (SWPPP) and a Spill Prevention Control and Countermeasures Plan (SPCC) would be developed and implemented for the entire new Moapa Valley collection system. The implementation of these mitigation measures would help further reduce any impacts to insignificant levels.
20. A Traffic Control Plan would be developed and implemented prior to construction activities taking place.

CHAPTER 6 CONSULTATION AND COORDINATION

6.1 INTENSITY OF PUBLIC INTEREST AND RECORD OF CONTACTS

There is general public interest in this type of potential development. The proposed project involved consultation and coordination among the affected parties and governing entities. Representatives of the NPS and CCWRD met as needed to evaluate this project.

NEPA regulations and Council on Environmental (CEQ) guidelines do not require that public scoping be held for the preparation of an EA. However, NPS Director's Order #12 does require some form of public involvement during the NEPA process. For this reason, the NPS has determined that past town advisory board meeting minutes, city council meeting minutes, newspaper articles, and public comments that have been held during the past two years be reviewed and covered in the EA.

The NPS issued a news release about the project to area media and posted the release on the park website on September 21, 2006. Moapa Valley Town Advisory Board (MVTAB), Citizens Advisory Council (CAC), and city council meetings over the past 2 years have included discussions of the wastewater treatment facility, specifically the new collection system. Meetings during the MVTAB occurred on 17 December 2005, 26 July 2006, and 10 January 2007 at the Moapa Valley Community Center, Overton, Nevada. The CAC and the CCWRD made presentations and discussed upgrades to the current facilities, the new facilities, and CAC recommendations for the new facilities. There was also a question and answer session to provide the public with project information and the opportunity to ask questions or make comments. The primary issues of concern that were raised during public meetings included: connection costs, annual service fees, location of the pipelines and effects to traffic, and rate increases. Another announcement explaining the Overton wastewater system, the Moapa Valley system expansion, and the CAC recommendations was placed on the CCWRD Clean Water Team website in February 2007.

The proposed project will be evaluated under NEPA, Section 7 of the Endangered Species Act, and Section 106 of the Historic Preservation Act. This document will be available for public review following publication. Notification of this EA is being sent to:

- U.S. Army Corp of Engineers
- U.S. Fish & Wildlife Service
- Nevada State Engineer
- Nevada Department of Wildlife
- Nevada State Historical Preservation Office
- Southern Nevada Water Authority

A press release announcing the availability of this environmental assessment is sent to area media and posted on the park's website. Individuals and organizations may request the environmental assessment in writing, by phone, or by e-mail. The environmental assessment is published on the Lake Mead NRA internet website at <http://www.nps.gov/lame/parkmgmt/docs.htm> and on the NPS PEPC internet website at <http://parkplanning.nps.gov/>. Electronic comments may be submitted to either internet website address. Written comments may be submitted to the address listed below. Comments on this environmental assessment must be submitted during the 30-day public review and comment period.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Lake Mead NRA's mailing list is comprised of 165 federal and state agencies, individuals, businesses, and organizations. The environmental assessment will be distributed to those individuals, agencies, and organizations likely to have an interest in this project. Entities on the park mailing list that do not receive a copy of the environmental assessment will receive a letter notifying them of its availability and methods of accessing the document. Copies of the environmental assessment are available at area libraries, including: Boulder City Library, Clark County Community College (North Las Vegas), Clark County Library, Las Vegas Public Library, Sunrise Public Library (Las Vegas), University of Nevada- Las Vegas James R. Dickinson Library, Moapa Valley Library (Overton, NV), Mesquite Library, and Washington County Library (St. George, UT).

A copy of the environmental assessment can be obtained by direct request to:

National Park Service, Lake Mead NRA
Attention: Compliance Office
601 Nevada Way
Boulder City, Nevada 89005
Telephone: (702) 293-8956

6.2 LIST OF PREPARERS/REVIEWERS

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Brian Christ	Project Manager	GC Wallace	Provide technical input, document review
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Steve Leslie	Environmental Planner	SWCA Environmental Consultants	Document Production and Review
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CHAPTER 7 REFERENCES AND LITERATURE CITED

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APPENDIX A. SOILS FOUND WITHIN THE PROJECT AREA

Soil Unit Number	Name	Texture	Slope %*	Depth (cm)*	Permeability	Wind Erosion Potential (Tons per year)	Subsidence (Gypsum)	pH*
988	Alluvial Land		0	>200	Moderately Well Drained	0	0	8.2
810	Arada	Fine Sand 2–8 % slope	5	>200	Somewhat Excessively Drained	250	0	8.7
887	Calico	Fine Sandy Loam, Drained	1	>200	Somewhat Poorly Drained	86	2	8.5
912	Calico	Loamy Fine Sand, Coarse Variant, Drained	1	>200	Somewhat Poorly Drained	134	0	8.2
919	Calico	Clay Loam	1	>200	Somewhat Poorly Drained	86	2	8.5
943	Calico	Fine Sandy Loam, Strongly Saline	1	>200	Somewhat Poorly Drained	86	2	8.5
954	Calico	Loamy Fine Sand, Coarse Variant, Drained	1	>200	Somewhat Poorly Drained	134	0	8.2
955	Calico	Clay Loam	1	>200	Somewhat Poorly Drained	86	2	8.5
969	Calico	Fine Sandy Loam	1	>200	Somewhat Poorly Drained	86	2	8.4
1008	Calico	Loamy Fine Sand, Coarse Variant, Strongly Saline	1	>200	Somewhat Poorly Drained	134	0	8.8
881	Overton	Silty Clay	1	>200	Very Poorly Drained	86	1	8.2
944	Overton	Silt Loam, Loamy Variant, Slightly Saline	1	>200	Somewhat Poorly Drained	86	0	8.8
959	Overton	Silty Clay	1	>200	Very Poorly Drained	86	0	8.2
971	Overton	Silty Clay, Strongly Saline	1	>200	Very Poorly Drained	86	0	8.7
986	Overton	Silt Loam, Loamy Variant, Slightly Saline	1	>200	Somewhat Poorly Drained	86	0	8.8
994	Tobler	Silt Loam, Wet	1	>200	Well Drained	86	0	8.2
1018	Tobler	Fine Sandy Loam	1	>200	Well Drained	86	0	8.2
1022	Tobler	Silt Loam, Wet	1	>200	Well Drained	86	0	8.2
1027	Tobler	Fine Sandy Loam, Strongly Saline	1	>200	Well Drained	86	0	8.2
936	Tonopah	Very Gravelly Sandy Loam	10	>200	Excessively Drained	56	3	8.8

Soil Unit Number	Name	Texture	Slope %*	Depth (cm)*	Permeability	Wind Erosion Potential (Tons per year)	Subsidence (Gypsum)	pH*
		4–15% slope						
915	Toquop	Fine Sand 0–2% slope	1	>200	Excessively Drained	250	3	8.5
921	Toquop	Fine Sandy Loam 0–2% slope	1	>200	Excessively Drained	86	3	8.5
875	Virgin River	Silty Clay	1	>200	Somewhat Poorly Drained	86	3	8.2
997	Virgin River	Silty Clay, Strongly Saline	1	>200	Somewhat Poorly Drained	86	3	8.2

* All values are averages.

**APPENDIX B. BIRDS FOUND WITHIN THE PROJECT AREA AND PROTECTED BY
THE MBTA**

Common Name	Scientific Name	Common Name	Scientific Name
Black-crowned night heron	<i>Nycticorax nycticorax</i>	Yellow-breasted chat	<i>Icteria virens</i>
Canada goose	<i>Branta canadensis</i>	Blue grosbeak	<i>Guiraca caerulea</i>
Verdin	<i>Auriparus flaviceps</i>	Abert's towhee	<i>Pipilo aberti</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	White-winged dove	<i>Zenaida asiatica</i>
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	Loggerhead shrike	<i>Lanius ludovicianus</i>
Common raven	<i>Corvus corax</i>	Cliff swallow	<i>Petrochelidon pyrrhonota</i>
Common moorhen	<i>Gallinula chloropus</i>	Mourning dove	<i>Zenaida macroura</i>
Pied-billed grebe	<i>Podilymbus podiceps</i>	Costa's hummingbird	<i>Calypte costae</i>
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	Anna's hummingbird	<i>Calypte anna</i>
Common yellowthroat	<i>Geothlypis trichas</i>	Bewick's wren	<i>Thryomanes bewickii</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>	Black phoebe	<i>Sayornis nigricans</i>
Song sparrow	<i>Melospiza melodia</i>	Black-throated sparrow	<i>Amphispiza bilineata</i>
Great tailed grackle	<i>Quiscalus mexicanus</i>	Gambel's quail	<i>Callipepla gambellii</i>
Marsh wren	<i>Cistothorus palustris</i>	Snowy egret	<i>Egretta thula</i>
Brown-headed cowbird	<i>Molothrus ater</i>	Say's phoebe	<i>Sayornis saya</i>
Spotted sandpiper	<i>Actitis macularia</i>	Lucy's warbler	<i>Vermivora luciae</i>
Killdeer	<i>Charadrius vociferus</i>	Blue-gray gnatcatcher	<i>Polioptila caerulea</i>
Great blue heron	<i>Ardea herodias</i>	Mallard	<i>Anas platyrhynchos</i>
Northern mockingbird	<i>Mimus polyglottos</i>	Great egret	<i>Ardea alba</i>
Black-tailed gnatcatcher	<i>Polioptila melanura</i>	Lesser nighthawk	<i>Chordeiles acutipennis</i>
White-faced ibis	<i>Plegadis chihi</i>		



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Date	Subject
March 2008	Environmental Assesment for the lower Moapa collection system (63 pgs; pdf; 886KB)
2007	Environmental Assessment for Construction of a Government Boating Repair Complex and Aids to Navigation Complex (66 pgs; word; 7.75 MB)
July 2007	Record of Decision for Clean Water Coalition Conveyance and Operations Program (18 pgs; pdf; 8.03 MB)
	FONSI's Lake Mead Intake NO. 3 Project (14 pgs; pdf; 131 KB)
	Muddy Mountains Wilderness Management Plan (9 pgs; pdf; 62 KB)
	Echo Bay Powerline Upgrades (15 pgs; word; 144 KB)
2007	Construction of a Government Boating Repair Facility and Aids to Navigation Complex (12 pgs; pdf; 7.91 MB)
	Laughlin Regional Park and Regional

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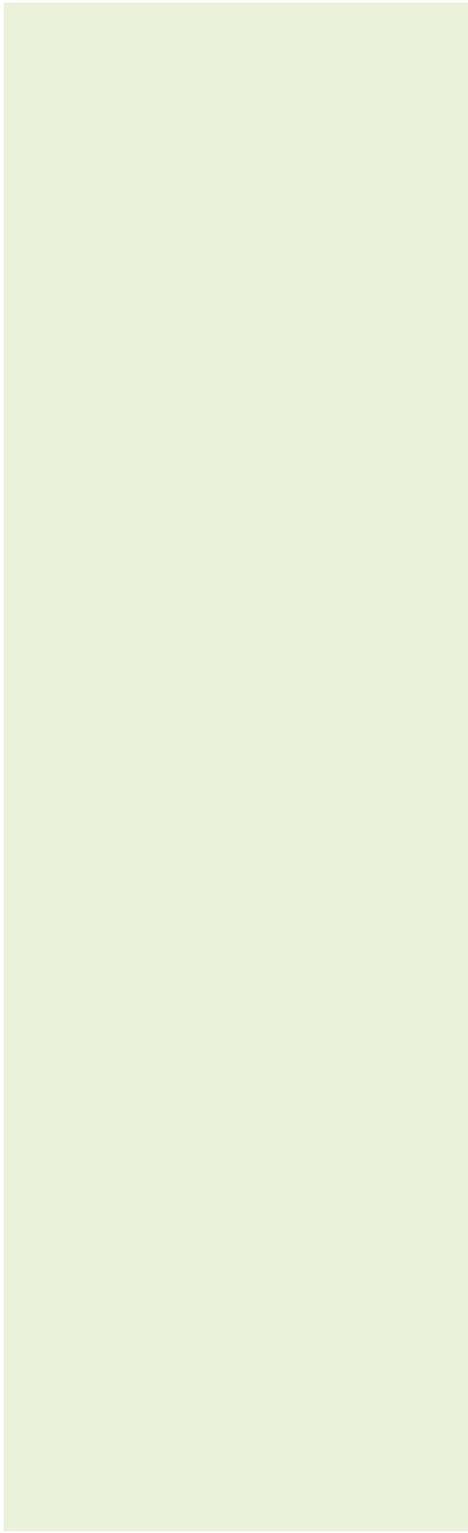
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September 2003	Environmental Assessment Desert Bighorn Sheep (58 pgs; pdf; 1,418 KB)
August 2003	Boating and Water Use Activities Proposed Rule, Federal Register(13 pgs; pdf; 95 KB)



April 2003	Economic Analysis of Personal Watercraft Regulations in Lake Mead National Recreation Area Final Report (148 pgs; pdf; 6,686 KB)
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February 2003	Environmental Assessment for the Realignment of South Telephone Cove Road (64 pgs; pdf; 1,511 KB)
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December 2002	Environmental Assessment Implementation of a Soils Monitoring Study (50 pgs; pdf; 872 KB)
November 22, 2002	Annual Performance Plan Fiscal Year 2003 (81 pgs; pdf; 335 KB)
September 2002	Environmental Assessment Las Vegas Bay Marina Emergency Relocation (85 pgs; pdf; 835 KB)
July 2002	Environmental Review: Rehabilitation of Callville Bay Road, Public Review. (124 pgs; pdf; 2,671 KB)
January 2002	Annual Performance Plan Fiscal Year 2002 (90 pgs; pdf; 219 KB)
2002	Lake Mead National Recreation Area Lake Management Plan Draft Environmental Impact Statement (html)
2002	Lake Mead National Recreation Area Strategic Plan Part A, 2001 - 2005 (html)

2002

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Strategic Plan Part B, 2001 - 2005 (html)

September 2001

Environmental Assessment Construction of a Water Safety Center
Boulder Beach (41 pgs; pdf; 1,099 KB)

July 2001

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