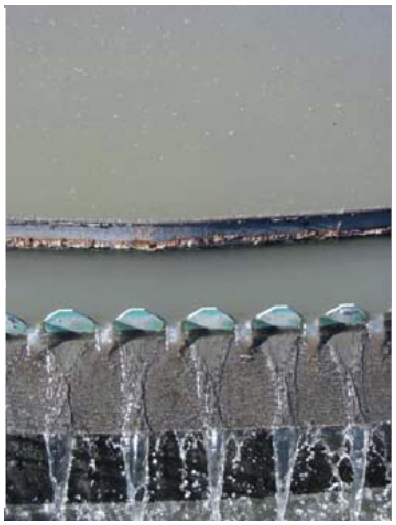
Environmental Assessment
Upgrade of the Indian Springs Collection and Treatment System



Prepared for

United States Air Force,
United States Environmental Protection Agency
and Clark County Water Reclamation District

December 2009

FINDING OF NO SIGNIFICANT IMPACT

1.0 NAME OF THE PROPOSED ACTION

Upgrade of the Indian Springs Collection and Treatment System

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Proposed Action

Clark County Water Reclamation District proposes to upgrade the existing wastewater treatment facility for the City of Indian Springs, Nevada. This upgrade will prevent nutrient leaching into the groundwater from unlined sewage treatment and disposal lagoon into groundwater from nutrient leaching from unlined sewage treatment and disposal lagoons. The proposed project involves constructing a wastewater treatment plant to remove nutrients and converting existing treatment lagoons to percolation ponds, and constructing additional percolation ponds. This work would take place within the footprint of the existing wastewater treatment facility property. This project also includes other improvements to wastewater collection systems in Indian Springs to re-route sewer lines around high hazard commercial properties.

In addition, The United States Air Force (USAF) proposes to abandon its current wastewater treatment system on base and construct a wastewater transmission pipeline to the existing Indian Springs lift station. The existing Creech Air Force Base (CAFB) Wastewater Treatment Plant (WWTP) will be demolished and removed, and the current treated effluent discharge ditch will be filled in. The USAF will help fund capacity and treatment improvements at the Indian Springs facility.

Alternatives to Proposed Action

The Environmental Assessment (EA) includes evaluation of impacts of one alternative to the proposed action: total containment of wastewater in lined ponds (the total containment alternative) and the no action alternative. Under the total containment alternative, collection system improvements would be similar to the proposed action, but instead of constructing treatment works to remove nitrogen, lagoons would be expanded and lined for treatment and evaporative disposal. To handle future flows, an additional 87 acres of lined lagoon would have to be added, and the existing approximately 15 acres of lagoons would have to be lined.

Under the no action alternative, CAFB would continue to operate its WWTP, the Indian Springs WWTF would operate as is, and the collection system would not be improved. This no action alternative does not address growth needs of Indian Springs or CAFB, and does not address the Finding of Alleged Violation and Order issued by the Nevada Department of Environmental Quality to correct the problem of elevated nitrate-nitrogen discharge to groundwater through unlined lagoons at the Indian Springs WWTF.

3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The Environmental Assessment (EA) provides an analysis of the potential environmental consequences resulting from implementing the proposed action and the alternatives, including no action. Several resources were assessed that in accordance with Council on Environmental Quality warrant no further examination in the EA. These resources were coastal zones, floodplains, land use, and infrastructure demands. Nine resource categories were thoroughly analyzed to identify potential impacts. The following summarizes and highlights the results of the analysis, by resource categories, that initial evaluation indicated could be effected by the proposed action.

Affected Resource	Proposed Action	Alternative 1: Total Containment	No Action
Socioeconomics	No significant impact	No significant impact	No significant impact
Cultural Resources	No cultural resources at or near project site	Impact would be similar to proposed action	No significant impact
Biological Resources	Due to low density of wildlife and with avoidance measures, impacts would not be significant	Impact would be similar to proposed action	No significant Impact
Groundwater	Beneficial impact	No significant impact	Adverse impact to groundwater
Soil	No significant impact	No significant impact	No significant impact
Air Quality	Temporary, minor impacts during construction	Impact would be similar to proposed action	Impacts could occur due to odor
Noise	Temporary and intermittent during construction. Acoustical barriers used during construction	Impact would be similar to proposed action	No significant impact
Hazardous Materials	Minor impact during construction and operation	Impact would be similar to proposed action	No significant impact
Safety	Minimal impacts during construction	Impact would be similar to proposed action	No significant impact

4.0 CONCLUSION

Based on the findings of the EA, conducted in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and Air Force Environmental Impact Analysis Process, as promulgated in Title 32 of the Code of Federal Regulations Part 989, and after careful review of the potential impacts, I conclude that implementation of the proposed action or the total containment alternative would result in no significant impact on the quality of the human or natural environment. Therefore a Finding of No Significant Impact is warranted, and preparation of an Environmental Impact Statement is not required for this action.

DIMASALANG F. JUNIO
Colonel USAF
Chief, Programs Division
HQ ACC

10 Dec 2009
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

FINDING OF NO SIGNIFICANT IMPACT
INDIAN SPRINGS COLLECTION AND TREATMENT SYSTEM PROJECT

The United States Environmental Protection Agency (EPA) is considering awarding grant funds in the amount of $578,600 to Clark County Water Reclamation District, to fund the Indian Springs Collection and Treatment System Project. The proposed project consists of upgrading the existing wastewater treatment facility for the City of Indian Springs, Nevada.

The purpose of the project is to upgrade the existing wastewater treatment facility for the City of Indian Springs, Nevada, to protect groundwater from nutrient leaching from unlined sewage treatment and disposal lagoons. In addition, the United States Air Force (USAF) proposes to abandon its current wastewater treatment system on Creech Air Force Base and construct a wastewater transmission pipeline to the existing Indian Springs lift station (not included in the EPA funding).

The construction elements of this project include constructing a wastewater treatment plant to remove nutrients, converting existing treatment lagoons to percolation ponds, construction additional percolation ponds, improvements to the wastewater collection systems in Indian Springs to re-route sewer lines around hazardous commercial properties, demolishing the existing Creech Air Force Base Wastewater Treatment Plant and removing it, and filling in the current treated effluent discharge ditch at Creech Air Force Base.

The EPA has completed an Environmental Assessment (EA), dated August, 2009 to evaluate the environmental consequences of the proposed action and alternatives along with the no action alternative. As a result of the EA, as well as public discussion of the proposed project and alternative, the EPA has determined the action will not have a significant impact on the quality of the human environment. An Environmental Impact Statement is not required.

The following supports the Finding of No Significant Impact (FONSI):

Coordination with the U.S. Fish and Wildlife Service (Service) indicated the Desert tortoise is the only federally listed species that may be present within the proposed project site. A review of the biological impacts indicated that the proposed construction will occur in an area where there is no indication of desert tortoise or tortoise sign and in an area covered by the Clark County Multiple Species Habitat Conservation Plan which applies to development of private land in Clark County. The project site is not within desert tortoise critical habitat. EPA has concluded that the portion of the project within

Indian Springs will not impact sensitive species including species federally listed as threatened or endangered. After review of biologic impacts based on the project design criteria for the portion of the project on private lands in Indian Springs, the EPA has concluded that the proposed project will have no effect on listed species. The Service issued an amendment to a Programmatic Biological Opinion for Activities on the South Range of Nellis Air Force Base, Nevada Test and Training Range and the Nevada Training Initiative, Clark and Lincoln Counties, Nevada. In accordance with the conditions of the Programmatic Biological Opinion covering Creech Air Force Base, the USAF has submitted project information to the Service and concluded that the project is consistent with the types of projects allowed under the Programmatic Biological Opinion. Coordination with the Nevada Division of Wildlife concluded that deleterious site specific impacts to wildlife or wetlands of concern are not anticipated.

The context and intensity of potential impacts on cultural resources were considered to determine whether the project would impact historic properties under the National Historic Preservation Act of 1966. The EPA consulted with the Nevada State Historic Preservation Office. The consultation concluded that no historic properties were found within the area of potential effects for the subject project. The SHPO concurred with the finding.

Public Review:
The EA and unsigned FNSI were made available for a 30-day public review period at EPA, Region 9, 75 Hawthorne Street, San Francisco, CA 94105-3901, at Nellis Air force Base, 4430 Grissom Ave., Suite 107, Nellis AFB, NV 89191, at Clark County Reclamation District, 5857 E. Flamingo Rd, Las Vegas, NV 89122, at the Las Vegas Library, 833 Las Vegas Blvd North, Las Vegas, NV 89101, and at the Indian Springs Library, 715 Gretta Lane, Indian Springs, NV 89018 and through publication of the Legal Notice of Availability in the Las Vegas Review Journal on September 3, 2009.

Findings

EPA received one comment letter on the EA for consideration within 30 calendar days from the date of publication of the Legal Notice of Availability. The letter was in support of the proposed project and does not require response.

EPA has determined that the proposed project will not have significant environmental impacts and than and Environmental Impact Statement will not be prepared for this project. EPA is taking administrative action on the above-described project. This FNSI is final upon signature by the Division Director. It will not be re-circulated for review, but will be available to any individual upon request.

Alexis Strauss
Water Division Director
EPA, Region 9

17 December 2009
Date

Environmental Assessment Upgrade of the Indian Springs Collection and Treatment System

Prepared for

United States Air Force,
United States Environmental Protection Agency,
and
Clark County Water Reclamation District

December 2009

ACRONYMS AND ABBREVIATIONS

ACC	Air Combat Command
AFB	Air Force Base
AFOSH	Air Force Occupational Safety and Health
AICUZ	Air Installation Compatible Use Zone
BLM	Bureau of Land Management
BOD	biochemical oxygen demand
CAA	Clean Air Act
CAFB	Creech Air Force Base
CBOD	carbonaceous biochemical oxygen demand
CCDCP	Clark County Department of Comprehensive Planning
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
DAQEM	Department of Air Quality and Environmental Management (Clark County)
dBA	A-Weighted Decibel
District	Clark County Water Reclamation District
DNWR	Desert National Wildlife Refuge
DoD	Department of Defense
du/acre	dwelling unit per acre
EA	environmental assessment
EDR	Environmental Data Resources, Inc.
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
gpcd	gallons per capita per day
gpd	Gallons per day
gpy	gallons per year
Indian Springs	the Town of Indian Springs
ISSC	the Indian Springs Sewage Company
kW	kilowatt
MBR	membrane bioreactor
MGD	million gallons per day
MSHCP	Multiple Species Habitat Conservation Plan (Clark County)
MUTCD	Manual on Uniform Traffic Control Devices
NAFB	Nellis Air Force Base
NDEP	Nevada Department of Environmental Protection
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTTR	Nevada Test and Training Range
OSHA	Occupational Safety and Health Administration
O_3	Ozone

ACRONYMS (Cont.)

Pb	Lead
PM2.5	Particulate Matter Less than 2.5 Microns
PM10	Particulate Matter Less than 10 Microns
RCP	reinforced concrete pipe
ROG	Reactive Organic Gas
RV	Recreational Vehicle
SO2	Sulfur Dioxide
TSS	total suspended solids
UFC	Unified Facilities Criteria
UIC	Underground Injection Control
UNLV	University of Nevada Las Vegas
U.S.	United States
USAF	United States Air Force
USC	United States Code
VCP	vitrified clay pipe
VOC	Volatile Organic Compound
WWTF	Wastewater Treatment Facility (lagoons)
WWTP	Wastewater Treatment Plant (treatment works)

Environmental Assessment

Upgrade of the Indian Springs Collection and Treatment System

December 2009

EXECUTIVE SUMMARY

December 2009

The Indian Springs Wastewater Treatment Facility (WWTF, Figures 1 and 2) is owned and operated by the Clark County Water Reclamation District (District). The Indian Springs WWTF serves the wastewater needs of approximately 1,300 people located in 526 residential units, and local commercial enterprises. The WWTF was built in the mid-1960's to serve the majority of residents in the Town of Indian Springs (Indian Springs), with the exception of 16 permitted septic units mostly located in the southeast portion of town.

The current treatment facility consists of four single stage stabilization ponds: Ponds 1 and 2 are for primary and secondary stage oxidation of wastewater; Pond 3 provides the final stage of wastewater oxidation and some degree of liquid-solids separation; and Pond 4 is a permeable percolation basin.

The Indian Springs Sewage Company (ISSC) Discharge Permit No. NEV50040 (permit) limits discharge of nitrates as nitrogen to 10.0 mg/l or less. The facility received a "Finding of Alleged Violation and Order" issued by the Nevada Department of Environmental Protection (NDEP) on 2 October 2003. The document identifies permit level violations and the failure to select, submit, and implement an alternative method of effluent disposal. The NDEP requires conversion of the existing treatment pond system to a total containment system or the construction of treatment facilities that have nitrate removal capabilities.

A treatment plant is proposed to reduce the concentration of nitrates entering the groundwater and contaminating the drinking water supply. The new treatment plant would include influent screening, biological treatment, effluent disposal, solids storage, and site improvements. The treatment plant would be built on the existing WWTF site adjacent to the existing ponds. In addition, the Proposed Action would connect the Creech Air Force Base (CAFB), formerly called Indian Springs Air Force Auxiliary Airfield, to the WWTF and involve other improvements to the wastewater collection system in Indian Springs. The existing CAFB wastewater treatment plant (WWTP) would be closed. Please see Figures 3 and 4 for an overview of the location of the major components of the Proposed Action.

This EA evaluates the environmental impacts of the Proposed Action. The document describes the purpose and need for the project (Section 1), the project and alternatives analyzed (Section 2), the affected environment and environmental consequences of the alternatives including the Proposed Action (Section 3), potential cumulative impacts (Section 4), and documentation used in the evaluation (References and Section 5).

The analysis shows that there would be no significant environmental impacts that would result from funding the Proposed Action using federal grants and loans from the US Environmental Protection Agency (EPA) and the USAF.

This EA has been prepared on behalf of the U.S. Environmental Protection Agency (EPA) and the United States Air Force (USAF) in accordance with the requirements of the NEPA, Council on Environmental Quality (CEQ) regulations, and USAF Environmental Impact Analysis Process, as promulgated in Title 32 of the Code of Federal Regulations Part 989.

Summary of Impacts

Best management practices and recommendations from regulatory agencies related to hazards and hazardous materials, air quality, and sensitive wildlife and plant species would be followed by the contractor. With the implementation of the regulatory required measures described herein and in Appendix A, there would not be any significant environmental impacts that would result from the project. Please see Table ES-1 below for a summary of the reasons potential environmental impacts that would result from the Proposed Action and two alternatives.

Table ES-1: Summary of Potential Environmental Impacts

Affected Resource	Proposed Action	Alternative 1: Total Containment	No Action Alternative
Land Use			
Significant and/or Important Farmlands	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Coastal Zones	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Coastal Barrier Resources	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Wild and Scenic Rivers	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Topography	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Land Use and Zoning	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
National Natural Landmarks	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Floodplain	Floodplain not present.	Floodplain not present.	Floodplain not present.
Geology/Seismic Considerations/Soils	Impacts would not be significant due to pre-construction soil tests.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Infrastructure			
Utilities	The new facilities would require minimal use of utilities. There would be no significant impacts.	No significant impacts would occur.	No significant impacts would occur.
Transportation and Access	Minimal construction impacts.	Minimal construction impacts.	No significant impacts would occur.

Affected Resource	Proposed Action	Alternative 1: Total Containment	No Action Alternative
Socioeconomics			
Economic Impacts	No significant impacts would occur.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Environmental Justice	No significant impacts would occur.	Impacts would be similar to those of the Proposed Action.	Potential threat to health of low income residents that drink groundwater.
Cultural Resources			
Historical, Architectural, Archaeological, and Cultural Sites	Due to the absence of cultural resources at or near the project site, there would be no significant impacts.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Aesthetic Resources	Impacts would not be significant due to the limited nature of new facilities.	No structures would be built. No significant impacts would occur.	No significant impacts would occur.
Biological Resources			
Wetlands	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Important Vegetation Types	Due to low density, there would be no significant impacts to yucca, cacti, or other plant species.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Endangered or Threatened Species and Critical Habitat	Due to low densities of wildlife and with implementation of avoidance measures, impacts would not be significant.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Environmentally Sensitive Areas	Due to the low density of wildlife and plant species, impacts would not be significant.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.

Water and Soil Resources			
Groundwater	Impacts would be beneficial due to advanced biological treatment.	No significant impacts would occur.	Significant adverse impacts to groundwater would occur due to an increased level of nitrates as nitrogen.
Soil	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Air Quality and Climate			
Air Quality	Impacts would be temporary and minor during construction. There would be no significant impacts during operations.	Impacts would be similar to those of the Proposed Action.	Significant impacts could occur due to odor.
Climate	There would be no significant impacts.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Other Concerns			
Hazardous Materials	Impacts would be temporary and minor during construction and operations.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Safety	Minimal impacts during construction, minor increase in risk to Indian Springs treatment works employees.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Noise	Noise would be temporary and intermittent during construction. Acoustical barriers would be in place during operations. No significant impacts would occur.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.

Environmental Assessment - Upgrade of the Indian Springs Collection and Treatment System

December 2009

Table of Contents

EXECUTIVE SUMMARY 1

Summary of Impacts 2

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION 1-1

1.1 INTRODUCTION 1-1
1.2 BACKGROUND 1-1
1.2.1 Location of the Proposed Action 1-1
1.3 PURPOSE AND NEED FOR THE ACTION 1-5
1.3.1 Requirement for Water Quality 1-5
1.3.2 Design Capacity 1-6
1.3.3 Collection System Conditions 1-6

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES 2-1

2.1 PROPOSED ACTION: COMBINED TREATMENT AND INDIAN SPRINGS WWTF TREATMENT UPGRADE 2-1
2.1.1 Work on Creech Air Force Base 2-1
2.1.2 Work in Indian Springs 2-1
2.2 METHODOLOGY FOR IDENTIFYING PROPOSED ACTION AND ALTERNATIVES 2-3
2.2.1 Basic Requirements and Exclusionary Criteria 2-3
2.2.2 Evaluation Criteria 2-3
2.3 ALTERNATIVES TO THE PROPOSED ACTION 2-3
2.4 NO ACTION ALTERNATIVE 2-4
2.4.1 Creech AFB 2-4
2.4.2 Indian Springs 2-4
2.5 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD 2-4
2.5.1 Creech AFB 2-5
2.5.2 Indian Springs 2-5
2.6 REGULATORY COMPLIANCE AND PERMIT REQUIREMENTS 2-6
2.6.1 Stormwater 2-6

2.6.2 NPDES Discharge Permit 2-6
2.6.3 Air Quality....2-6
2.6.4 Noise 2-7
2.6.5 Environmental Justice 2-7
2.6.6 Groundwater Protection 2-7
2.6.7 Biological Resources....2-7
2.6.8 Floodplain Management....2-8
2.6.9 Cultural Resources....2-8
2.6.10 Solid/Hazardous Materials and Waste 2-8
2.6.11 Construction 2-8
2.7 SUMMARY OF IMPACTS 2-8

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 3-1

3.1 ANALYSIS APPROACH....3-1
3.1.1 General Project Area....3-1
3.1.2 Resources Analyzed 3-4
3.1.3 Resources Eliminated from Further Analysis 3-5
3.2 SOCIOECONOMICS....3-5
3.2.1 Affected Environment....3-5
3.2.1.1 General Project Area 3-5
3.2.2 Environmental Consequences 3-7
3.2.2.1 General Project Area 3-7
3.3 CULTURAL RESOURCES....3-7
3.3.1 Affected Environment....3-8
3.3.1.1 Creech AFB 3-8
3.3.1.2 Indian Springs....3-8
3.3.2 Environmental Consequences 3-10
3.3.2.1 Creech AFB 3-10
3.3.2.2 Indian Springs....3-11
3.4 BIOLOGICAL RESOURCES....3-12
3.4.1 Affected Environment....3-12
3.4.1.1 General Project Area 3-12
3.4.2 Environmental Consequences 3-17
3.4.2.1 General Project Area 3-17
3.5 WATER AND SOIL RESOURCES....3-19
3.5.1 Affected Environment....3-19
3.5.1.1 General Project Area 3-19
3.5.2 Environmental Consequences 3-22
3.5.2.1 General Project Area 3-22
3.6 AIR QUALITY....3-23
3.6.1 Affected Environment....3-23
3.6.1.1 General Project Area 3-23
3.6.2 Environmental Consequences 3-24
3.6.2.1 General Project Area 3-24
3.7 HAZARDOUS MATERIALS AND WASTE 3-28
3.7.1 Affected Environment....3-28

3.7.1.1 Creech AFB 3-28
3.7.1.2 Indian Springs 3-28
3.7.2 Environmental Consequences 3-29
3.7.2.1 Creech AFB 3-29
3.7.2.2 Indian Springs 3-29
3.8 SAFETY 3-30
3.8.1 Affected Environment 3-30
3.8.1.1 Creech AFB 3-30
3.8.1.2 Indian Springs 3-31
3.8.2 Environmental Consequences 3-31
3.8.2.1 Creech AFB 3-31
3.8.2.2 Indian Springs 3-32
3.9 NOISE 3-33
3.9.1 Affected Environment 3-33
3.9.1.1 General Project Area 3-33
3.9.2 Environmental Consequences 3-33
3.9.2.1 General Project Area 3-33

4.0 CUMMULATIVE EFFECTS AND IRREVERSIBLE AND IRRECTRIEVABLE COMMITMENT OF RESOURCES 4-1

4.1 CUMULATIVE EFFECTS 4-1
4.1.1 Scope of Cumulative Effects Analysis 4-1
4.1.2 Cumulative Effects of Reasonably Foreseeable Actions 4-1
4.2 IRREVERSABLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES 4-1

REFERENCES CITED 4-2

5.0 PERSONS AND AGENCIES CONTACTED 5-1

6.0 LIST OF PREPARERS AND CONTRIBUTORS 6-1

7.0 LIST OF AGENCIES RECEIVING ENVIRONMENTAL ASSESSMENT DOCUMENTS 7-1

List of Tables

ES-1	Summary of Potential Environmental Impacts	ES-2
1	Summary of Potential Environmental Impacts	2-9
2	Vegetative Species Observed Near the Proposed Action Site	3-13
3	Groundwater Monitoring Nitrogen Data	3-21
4	National Ambient Air Quality Standards	3-24
5	Proposed Action Maximum Construction Emissions and Impacts	3-26
6	Toxic Air Pollutant Emissions and Risk	3-26
7	Alternative 1 Maximum Construction Emissions and Impacts	3-27

List of Figures

1 Vicinity Map for Indian Springs
2 Indian Springs Topographic Map
3 Project Site, Creech AFB
4 Project Site, Indian Springs
5 Land Use Zoning Map

List of Appendices

A Correspondence
B Pollution Emissions Calculations for Construction
C Noise Emissions Calculations for Construction

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) characterizes the impacts to natural and other resources associated with the Proposed Action to upgrade the Indian Springs Wastewater Treatment Facility (WWTF) so that:

- Treated effluent will meet discharge limits and protect groundwater resources;
- The WWTF will provide sufficient current and future treatment capacity, including taking on wastewater treatment for the adjacent Creech Air Force Base (CAFB), and
- Reliability and safety of portions of the Town's sewer collection system will be improved.

The EA follows a format that meets the requirements of the National Environmental Policy Act (NEPA, 42 United States Code [USC] 4321-4347), Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Sections 1500-1508), as implemented by the United States Air Force (USAF) under 32 CFR Part 989, et seq., *Air Force Environmental Impact Analysis Process*, and the United States Environmental Protection Agency (EPA) under 40 CFR part 6, *Procedures for Implementing the National Environmental Policy Act and Assessing the Environmental Effects Abroad of EPA Actions*. In the first section, the purpose and need for the action is discussed. In Section 2, the project is described, along with alternatives that were evaluated and eliminated from detailed analysis, and alternatives (including no action) that are carried through the impacts analysis. In Section 3, the baseline environmental conditions are described, along with the impacts of the Proposed Action and alternatives, broken out by project components on the CAFB and in the Town (including the WWTF).

As the prime funding agent, the US EPA is the Lead Agency responsible for making a determination of significance regarding the project impacts; however, because funding is being provided by the USAF and Clark County, these agencies are cooperating agencies.

1.2 BACKGROUND

Indian Spring's WWTF is currently under a Finding of Alleged Violation and Order issued by the Nevada Department of Environmental Protection (NDEP) that requires treatment to reduce effluent nitrate levels to a level that is protective of groundwater and to provide more reliable collection and treatment.

CAFB has a separate wastewater treatment system that is reaching capacity and as the base continues to expand the demand on the outdated system continues to grow. To meet this future demand CAFB will be connected to the Indian Springs collection system.

1.2.1 Location of the Proposed Action

Indian Springs is located in northwest Clark County, Nevada; approximately 45 miles northwest of Las Vegas, along US Highway 95 (Figure 1).

Kennedy/Jenks Consultants

Clark County Water Reclamation District
Indian Springs, NV

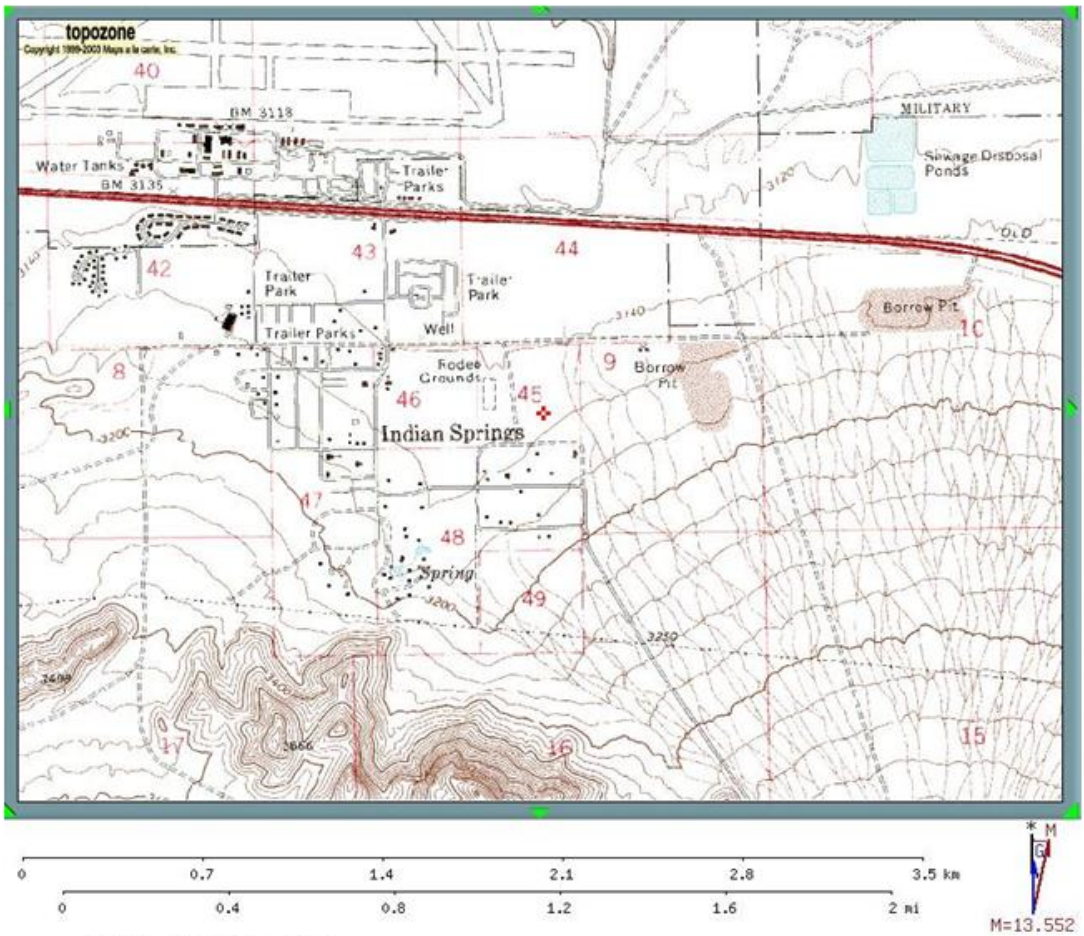
Improvements to the Indian Springs Treatment Facility EID

Vicinity Map for Indian Springs
0794201 and 0794202

December 2009

Figure 1

CAFB is also located near Indian Springs, Nevada; approximately 45 miles northwest of Las Vegas, along US Highway 95 (Figure 2). USAF facilities are found on both the north and south side of the highway, with the majority of assets located to the north (e.g., runways; hangars; and maintenance, administrative, and operational facilities).



Indian Springs, NV

Kennedy/Jenks Consultants

Clark County Water Reclamation District
Indian Springs, NV

Improvements to the Indian Springs Treatment Facility EID
Indian Springs Topographic Map
0794201 and 0794202

December 2009
Figure 2

1.3 PURPOSE AND NEED FOR THE ACTION

The purpose and need for the action are based on protection of groundwater quality, treatment capacity needs, and poor condition of some of the existing collection system. For several years, the wastewater facilities in Indian Springs were owned, maintained, and operated by a local, private entity. The Clark County Water Reclamation District (District) became responsible for the system in 2003 when increasing regulatory compliance issues, need for capital investments to maintain the system in a reliable working order, changes in treatment requirements, and aging facilities and infrastructure made it nearly impossible for treatment to be adequately provided by a private owner.

The project for Indian Springs is needed to address water quality concerns and to provide adequate capacity for Indian Springs and CAFB (formerly Indian Springs Air Force Auxiliary Field). The Nevada Department of Environmental Protection (NDEP) issued a permit (Permit No. NEV 50040) for discharging effluent from the Indian Springs WWTF to evaporation/percolation ponds. As part of the permit monitoring requirements, groundwater samples from two local wells were taken and analyzed quarterly for total dissolved solids, chloride, nitrate (as nitrogen), and total nitrogen. The results of the sampling indicated that the nitrate-nitrogen levels in the groundwater in the vicinity of the existing Indian Springs wastewater facility were exceeding the 10 milligram per liter (mg/l) groundwater quality goal (also the drinking water maximum contaminant limit). The existing treatment lagoons are not adequate to treat future flows and loads, and are not designed to remove nitrogen to levels that are below discharge permit standards for protection of groundwater.

In accordance with the Indian Springs discharge permit, the District is required to construct and operate new facilities that will provide sufficient nutrient removal to address the elevated nitrate-nitrogen in groundwater levels. In addition, the permit requires that the proposed plant must be designed to perform to higher standards than the current permit requirements. Therefore the District is proposing to construct a new mechanical secondary treatment plant on the District owned site adjacent to the existing treatment lagoons.

During the planning and design of the new Indian Springs plant, treatment capacity concerns at the existing CAFB wastewater treatment plant (WWTP) became more of a concern as the Base continues to expand. In 2007, the District agreed to include capacity at the new Indian Springs treatment works for CAFB. Therefore the new Indian Springs treatment works will serve both Indian Springs and CAFB.

1.3.1 Requirement for Water Quality

The Indian Springs WWTF is unable to meet its National Pollutant Discharge Elimination System (NPDES) permit limit for discharge of nitrates as nitrogen (10.0 mg/l or less, CCWRD 2004). The facility influent contains nitrate levels of 35-50 mg/l, which, following treatment, is discharged to infiltration basins. The facility is currently not meeting NDEP groundwater quality requirements in monitoring wells downgradient of the treatment plant infiltration basins. As a result, the facility is under a Finding of Alleged Violation and Order issued by the NDEP on 2 October 2003 to correct the problem. This Order requires conversion of the existing treatment pond system to a total containment system or construction of treatment facilities that have adequate nitrate treatment capabilities.

CAFB operates a separate WWTP that also discharges to groundwater. Combining wastewater treatment capabilities with the Indian Springs facility would eliminate the need for the USAF to operate a separate treatment system, realize greater treatment efficiencies, and discharge treated effluent under one permit that is the responsibility of The District.

1.3.2 Design Capacity

The population of the Indian Springs is expected to grow marginally and the number of hotel rooms is expected to grow by 2.5% per year. Additionally, current septic system users are assumed to connect to the wastewater collection network at a rate of one unit per year (Stanley Consultants, Inc. 2004).

The adjacent CAFB, which is growing as its mission expands, has requested that sewage from the Base be routed to the Indian Springs treatment system. The CAFB WWTP is permitted to discharge up to 0.145 million gallons per day (mgd) based on a 30-day average, and a peak maximum of 0.174 mgd. The District anticipates that the facility design capacity of 0.50 mgd (0.25 MGD for Indian Springs and 0.25 mgd for CAFB) would accommodate the loading from these two sources.

Presently the influent wastewater flow rate is not monitored at the Indian Springs WWTF. Consequently, flow predictions were based on the population connected to the sewer system and the number of hotel rooms in Indian Springs. A wastewater generation rate of 70 gallons per capita per day (gpcd) was used based upon similar communities in Clark County. The wastewater flows from hotel rooms were based on 350 gallons per day (gpd) per room generation rate, with assumed hotel occupancy of 85%. The District's current assessment is that a 0.5 mgd capacity would best serve the current and future needs of the community and CAFB.

The existing design capacity of the Indian Springs WWTF is 0.114 mgd. The new plant would have 4.4 times for capacity than the existing facility to satisfy community and CAFB demands.

1.3.3 Collection System Conditions

In addition to connecting CAFB to the Indian Springs facility, two collection system lines in the Indian Springs are in poor condition and/or are located under active high risk businesses, including a commercial fuel station. These two sections of the collection system will be replaced to prevent potential releases of untreated sewage due to pipeline failure.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION: COMBINED TREATMENT AND INDIAN SPRINGS WWTF TREATMENT UPGRADE

This preferred alternative has the least environmental impacts and is the most effective in meeting project goals. The proposed facility upgrade includes installation of a 0.5 MGD treatment plant. Peak capacity would be 1.3 MGD.

2.1.1 Work on Creech Air Force Base

The existing CAFB WWTP would be demolished and the effluent percolation ditch on the base would be filled in. A pump station would be constructed at CAFB to convey sewage from the Base to the Indian Springs WWTF. The following projects would take place on CAFB:

a. Demolishing the existing CAFB WWTP
b. Demolishing and removing the existing 12-inch diameter clay discharge pipe and filling of the existing percolation ditch
c. Constructing a new Hangar 1000 lift station next to the existing lift station on the CAFB site
d. Installing approximately 5,520 feet of 6-inch-diameter forcemain from the Hangar 1000 lift station to the gravity sewer line south of the Air Force Base (AFB) runways
e. Installing approximately 880 feet of 15-inch-diameter gravity sewer piping between the South Creech collection system and the Indian Springs lift station.

2.1.2 Work in Indian Springs

The treatment plant would include an influent flow meter, screening, biological treatment for the reduction of biochemical oxygen demand (BOD) and nitrate-nitrogen, and effluent disposal. Biological treatment would be contained in a large basin suspended growth reactor vessel that conducts both anoxic and aerobic biological reactions within a solitary unit.

The sludge disposal facility would consist of a single, large concrete-lined basin with a second basin available for redundancy and emergency raw sewage isolation. The lowest portion of the basin would be naturally anaerobic due to the presence of the sludge fed to the basin and the settling to the bottom. A facultative environment would naturally occur between the aerobic and anaerobic zones of the basin. Excess sludge would be harvested, if necessary, every three to five years and disposed or reused of according to state and federal standards.

The treated effluent disposal facilities would convert the existing ponds to percolation basins and add two new basins also located on the Indian Springs WWTF site. These basins would be maintained to obtain the maximum percolation rate with the existing native soil characteristics.

Specific work on the Indian Springs Lift Station and Treatment System include:

a. Upgrading the existing lift station to increase its capacity to 1.3 million gallon per day (MGD) to be constructed at the location of the existing lift station; lift station will include three submersible pumps, a valve vault, odor control systems a standby electrical generator, paving, security wall and gates, piping, and electrical work.

b. Upgrading power service to the lift station; NV energy will install a subsurface power conduit in the ditch on the north side of Highway 95, running west to a substation; the power conduit will connect the new Indian Springs WWTF to the existing NV Energy substation located on the west side of Indian Springs. The power conduit will be in the same utility routing that connects the new Indian Springs lift station to the WWTP, running about 6,200 feet. Additional conduit will then run about 3,800 feet from the lift station to the NV Energy substation. The conduit will be four inch diameter buried at depths ranging up to four feet. There will be 14 conduit pull boxes installed along the conduit run. The trench upper surface will be restored to match existing conditions.

c. Installing approximately 6,200 feet of 8-inch-diameter and 6,200 feet of 10-inch-diameter forcemain to be installed along the route of the existing forcemain north of Highway I-95.

d. Constructing a new mechanical treatment plant located next to the existing treatment lagoons designed for an average flow of 0.5 MGD and a peak flow of 1.3 MGD. Treatment plant will include:

    i. Headworks with screens and grit removal

    ii. Two secondary treatment basins with aeration for biological treatment to reduce BOD, TSS and Nitrate nitrogen to meet discharge permit standards. The basins will be lined with concrete

    iii. A blower building with mechanical and electrical equipment

    iv. A secondary effluent flow control structure diverting secondary effluent to six percolation basins. The structure will contain utility water pumps

    v. Two new 3.1 acre percolation basins constructed on the Indian Springs WWTF site

    vi. Scarification and conversion of the existing 14.8 acres of existing treatment lagoons to percolation ponds

    vii. Two new facultative sludge basins and a raw sewage bypass return lift station (two submersible pumps). The basins will be lined with concrete

    viii. A standby electrical generator

    ix. Grading, yard piping, and security fencing.

e. Installing a new SCADA system with associated computer..

f. The project may include installation of sun-tracking photovoltaic panels on up to 8 acres of the existing Indian Springs WWTF property. This portion of the project will be designed in consultation with USAF to ensure there are no safety impacts to CAFB. The solar installation would be similar to the type of panels recently installed at Nellis Air Force Base (NAFB) (USAF 2006). The panels would be orientated to the south and track the sun on alt-azimuth mountings. The panels would be mounted on concrete or other material footings set in the ground. It is anticipated that the facility could generate up to 770 kilowatts (kW), and assuming 6 hours a day average sunlight, up to 4.6 megawatt hours per day.

Portions of the collection system in Indian Springs would be upgraded to address potential failure

and to route the system around sensitive areas, including a commercial fueling station.

Improvements to the Indian Springs Collection System will involve:

a. Installing 110 feet of 18-inch pipe under Highway I-95 adjacent to the upgraded Indian Springs lift station.
b. Installing 200 feet of 18-inch pipe relocation to allow the current collection system under a gas station to be abandoned.

2.2 METHODOLOGY FOR IDENTIFYING PROPOSED ACTION AND ALTERNATIVES

The proposed action and alternatives were identified through a process that examined the basic requirements for the action; the exclusionary criteria that eliminated actions from consideration; and the need for additional analyses. Actions in locations that were not compatible with or violated environmental constraints (such as locations of threatened or endangered species), or have already been analyzed under NEPA, were not included within the proposed action and alternatives.

2.2.1 Basic Requirements and Exclusionary Criteria

The basic requirements for the project are to meet treatment capacity needs and NPDES discharge limits for nitrates and other constituents of concern.

Exclusionary criteria are:

- High cost of construction and operation
- Unacceptable impacts to sensitive habitats and species
- Unacceptable impacts to public safety and operations at CAFB.

2.2.2 Evaluation Criteria

In selecting the alternatives, the following evaluative criteria were considered:

- Minimize risks to public safety
- Minimize disruptions to CAFB, commerce, and residents
- Ensure compliance with discharge limits
- Maximize collection system and treatment reliability
- Reduce operations and maintenance cost.

2.3 ALTERNATIVES TO THE PROPOSED ACTION

The proposal to include a photovoltaic energy generation system at the Indian Springs facility is a project alternative; however evaluation of this elective portion of the project was included in the Proposed Action because, except for energy usage, project impacts would be less if the photovoltaic energy portion is not included in the final project.

Alternative 1: Conversion of existing treatment pond to total containment system (Total Containment) was also evaluated. This alternative includes rehabilitating and relining the existing

pond facilities and constructing a 100% evaporation pond effluent disposal system. Calculations indicate that the total amount of surface area required to evaporate the current 0.114 MGD average day design flow at a rate of 66 inches-per-year is about 23 acres. Currently, there are 14.8 acres of pond surface area. To convert the facility to an evaporative system under current flows, about 8.5 acres of additional pond surface area would be required. To expand the facility to 0.5 MGD average daily flow, a total of about 102 acres of pond surface would be needed. This alternative would reduce the environmental risk to the groundwater due to the replacement of percolation ponds with a 100 percent evaporative system. Therefore, the discharge effluent limits in the NPDES permit would not apply, including the 10 mg/l nitrate-nitrogen limit set to protect groundwater. This alternative would include the force mains and upgraded lift stations associated with conveying wastewater from the CAFB to the total containment system. There would be no disposal of the wastewater under this alternative.

2.4 NO ACTION ALTERNATIVE

The third alternative is to maintain the existing facilities without any additions or upgrades. This alternative would likely result in continued increases in total nitrate-nitrogen levels as monitored in groundwater wells downstream of the treatment plant. Although the No Action Alternative does not meet the project's purpose and need, the No Action Alternative will serve as a baseline against which the impacts of the Proposed Action and alternatives can be evaluated.

2.4.1 Creech AFB

Under the No Action Alternative, CAFB would continue to treat its wastewater using the existing on-base facility, and would continue to discharge to a percolation ditch under a separate NPDES permit. Under the No Action Alternative, the current CAFB WWTP would not be able to meet future grown needs.

2.4.2 Indian Springs

Under the No Action Alternative, the Indian Springs WWTF would continue to operate as is with percolation basin discharge, and no repairs to the collection system would be made. While this alternative is contrary to the NDEP Finding of Alleged Violation and Order requirements to upgrade plant treatment, it is retained to provide a baseline for assessment of project impacts.

2.5 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Other combinations of the project elements were considered during the project scoping and planning process. These included not decommissioning the CAFB plant, not constructing a forcemain connection to the Indian Springs WWTF, and continuing to operate the CAFB WWTP separately. Eliminating the collection system improvements described for the Proposed Action was also considered. Because the impacts of these various combinations of the project have the same impacts as either the whole project described under the Proposed Action, Alternative 1 (Total Containment), or the No Action Alternative, the impacts analysis for these variations were not evaluated separately.

2.5.1 Creech AFB

In addition to continuation of operation of the CAFB WWTF, various routes for the force main connection to the Indian Springs were considered in the facility planning. Because these routes have similar requirements and impacts, separate force main routes were not carried though this EA.

2.5.2 Indian Springs

A variety of treatment alternatives was also considered for the new Indian Springs treatment facility. An alternative to continued use of lagoon treatment at the Indian Springs WWTF facility and expand the lagoons onto Bureau of Land Management (BLM) property east of the facility was considered. This alternative was dropped from consideration because of land use concerns, potential aircraft safety issues associated with creating more ponds, and failure of this option to address groundwater protection issues.

Several mechanical secondary treatment alternatives that would meet the future discharge requirements were also considered. The alternatives included below-grade conventional package treatment plants in concrete or plastic-lined basins and above-grade package treatment plants using either conventional activated sludge or membrane bioreactor (MBR) treatment. Each of the alternatives would fit easily into the District-owned property adjacent to the existing treatment lagoons and each would require a similar level of mechanical facilities such as support buildings and access roads. The below-grade conventional package treatment plant with concrete lined tanks was selected as the most cost effective alternative that would provide proven secondary treatment and nitrogen removal as well as facilities with long-term viability. Hence this treatment alternative was chosen as the preferred alternative.

The Indian Springs WWTF is located in the vicinity of the CAFB. In order to address concerns about standing water and birds, the project considered “bird balls” as an alternative to cover lagoons and deter waterfowl. The bird balls are approximately 4-inch diameter colored plastic balls that are used at airports to cover large water surface areas and inhibit birds from landing on the water. The estimated capital cost of bird balls for the percolation ponds at the Indian Springs facility was in the order of $4 million to cover the existing 14.8 acres of treatment lagoons converted to percolation ponds. In addition to the cost, there are concerns about the long-term viability of the bird balls at this remote location with limited staffing.

Construction of an additional 6.2 acres of percolation ponds on the District owned site was evaluated as an alternative to provide sufficient percolation capacity to effectively eliminate standing water in any one percolation pond with a rotating operational strategy. Two additional 3.1 acre percolation ponds are proposed to be constructed to provide a total of six percolation ponds at a total area of 21 acres. The plant would be designed such that effluent flow would be rotated regularly to each of the six ponds to minimize standing water in any one pond. This alternative was included in the preferred alternative to reduce safety risks associated with standing water in percolation basins.

2.6 REGULATORY COMPLIANCE AND PERMIT REQUIREMENTS

This EA examines the affected environment for implementation of the project and its alternatives, and compares those to the no-action alternative. It also examines the cumulative impacts within the affected environment at each of these locations as well as past, present, and reasonably foreseeable actions of the USAF and other federal, state, and local agencies.

The NEPA process is intended to assist decision makers in understanding the environmental consequences and in taking appropriate actions that protect, restore, and enhance the environment.

Other federal statutes that may apply to the proposed action are discussed below.

2.6.1 Stormwater

Under the proposed action, CAFB would update applicable base permits and assist in obtaining all stormwater-related permits for new construction of forcemains and demolition of the existing CAFB WWTP.

Indian Springs would also require coverage under the general construction stormwater NPDES permit.

Because the new Indian Springs WWTF is under 1 MGD capacity, it is not required to have a general stormwater permit for post-construction discharge.

2.6.2 NPDES Discharge Permit

Under the Water Federal Water Pollution Control Act of 1972 (PL 92-500) and Amendments; Clean Water Act (CWA) of 1977 (PL 95-217); USEPA, Subchapter D-Water Programs (40 CFR 100-145); Water Quality Act of 1987 (PL 100-4); USEPA, Subchapter N; and Effluent Guidelines and Standards (40 CFR 401-471); Safe Drinking Water Act of 1972 (PL 95-923) and Amendments of 1986 (PL 99-339); the upgraded Indian Springs Treatment Facility would require significant changes to its NPDES discharge permit to reflect increased treatment capacity, conversion to percolation ponds, and biosolids disposal.

The CAFB WWTP NPDES discharge permit would be discontinued after demolition of the facility.

2.6.3 Air Quality

Under the Air Clean Air Act (CAA) of 1970 (PL 95-95), as amended in 1977 and 1990 (PL 91- 604); EPA, Subchapter C-Air Programs (40 CFR 52-99), and local regulations, an air quality dust permit must be obtained from Clark County if construction at any site causes 0.25 acres or more of topsoil disturbance, trenching of 100 feet or more, or demolition of structures 1,000 square feet or more. The Proposed Action and Alternative 1 (Total Containment) would trigger the need for an air quality dust permit during construction.

The Clean Air Act (section 176(c)(4)) General Conformity Rule requires actions taken by federal agencies in nonattainment and maintenance areas meet national standards for air quality. Under

this rule, federal agencies must work with State, Tribal and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the initiatives established in the applicable state or tribal implementation plan.

Shoulder stabilization instead of paving must be maintained in compliance with the stabilization standards in section 9.3.2.1.5 of the Clark County Air Quality Regulations.

Prior to demolition or additions to buildings, asbestos surveys are required by federal, state, county, and USAF regulations. For the removal of asbestos, a notification process with Clark County, the state health board, the EPA, and the Base asbestos and lead-based paint coordinator is required.

Asbestos removal would be contracted to state-certified and licensed contractors. Contractors would obtain the necessary permits for the removal, handling, and transportation of asbestos. Contractors must have access to a permitted landfill for disposal of asbestos.

No operational air quality permits appear necessary under the Proposed Action, Alternative 1 (Total Containment), or the No Action Alternative.

2.6.4 Noise

The Noise Control Act of 1972 (PL 92-574) and Amendments of 1978 (PL 95-609); U.S. Environmental Protection Agency (EPA), Subchapter G-Noise Abatement Programs (40 CFR 201-211) and local noise ordinances apply to construction and operation of the facilities.

2.6.5 Environmental Justice

Executive Order 12898-Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations; Protection of Children from Environmental Health Risks and Safety Risks (Executive Order 13045) applies to this project.

2.6.6 Groundwater Protection

EPA, National Drinking Water Regulations and Underground Injection Control (UIC) Program (40 CFR 141-149) require permitting of any injection structures for stormwater and wastewater disposal. Stormwater drywells are included in this permitting requirement. However, because the percolation ponds are not considered underground injection devices, UIC permitting is not required.

Under Nevada regulations, land application discharges require a permit and must be protective of groundwater resources. The relevant applicable standard is the maximum contaminant limit for nitrate-nitrogen, which is 10 mg/l.

2.6.7 Biological Resources

The following laws and regulations pertaining to biological resources apply to this project:

Migratory Bird Treaty Act of 1918; Fish and Wildlife Coordination Act of 1958 (PL 85-654); Sikes Act of 1960 (PL 86-97) and Amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX);

Endangered Species Act (ESA) of 1973 (PL 93-205) and Amendments of 1988 (PL 100-478); Fish and Wildlife Conservation Act of 1980 (PL 96-366); Lacey Act Amendments of 1981 (PL 97-79) Wetlands and Floodplains Section 401 and 404 of the Federal Clean Water Act.

2.6.8 Floodplain Management

The Floodplain Management Executive Order from 1977 (Executive Order 11990); Emergency Wetlands Resources Act of 1986 (PL 99-645); North American Wetlands Conservation Act of 1989 (PL 101-233) protect floodplains and wetlands, which may apply to this project.

2.6.9 Cultural Resources

The following laws and regulations related to preservation of cultural resources apply to the project:

National Historic Preservation Act (NHPA) of 1966 (16 USC 470 et seq.) (PL 89-865) and Amendments of 1980 (PL 96-515) and 1992 (PL 102-575); Protection and Enhancement of the Cultural Environment-1971 (Executive Order 11593); Indian Sacred Sites-1966 (Executive Order 13007); American Indian Religious Freedom Act of 1978 (PL 94-341); Antiquities Act of 1906; Archaeological Resources Protection Act of 1979 (PL 96-95); Native American Graves Protection and Repatriation Act of 1990 (PL 101-601)

2.6.10 Solid/Hazardous Materials and Waste

The following laws and regulations related to solid waste and hazardous waste may apply to the project.

Resource Conservation and Recovery Act of 1976 (PL 94-5800), as Amended by PL 100-582; EPA, subchapter I-Solid Wastes (40 CFR 240-280); Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601) (PL 96-510); Toxic Substances Control Act (PL 94-496); EPA, Subchapter R Toxic Substances Control Act (40 CFR 702-799); Federal Insecticide, Fungicide, and Rodenticide Control Act (40 CFR 162-180); Emergency Planning and Community Right-to-Know Act (40 CFR 300-399).

2.6.11 Construction

For new buildings, the Base would submit plans and a request for location to the CAFB zoning and development board, Indian Springs, and Clark County. An Authority to Construct permit is required for construction projects, whereas, demolition projects require completion of a Clark County Demolition Notification form.

2.7 SUMMARY OF IMPACTS

Best management practices and recommendations from regulatory agencies related to hazards and hazardous materials, air quality, and sensitive wildlife and plant species would be followed by the contractor. With the implementation of the regulatory required measures described herein and in Appendix A, there would not be any significant environmental impacts that would result from the

project. Table 1 provides a summary of potential environmental impacts which would result from implementing the proposed action and the two alternatives.

Table 1: Summary of Potential Environmental Impacts

Affected Resource	Proposed Action	Alternative 1: Total Containment	No Action Alternative
Land Use			
Significant and/or Important Farmlands	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Coastal Zones	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Coastal Barrier Resources	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Wild and Scenic Rivers	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Topography	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Land Use and Zoning	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
National Natural Landmarks	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Floodplain	Floodplain not present.	Floodplain not present.	Floodplain not present.
Geology/Seismic Considerations/Soils	Impacts would not be significant due to pre-construction soil tests.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Infrastructure			
Utilities	The new facilities would require minimal use of utilities. There would be no significant impacts.	No significant impacts would occur.	No significant impacts would occur.
Transportation and Access	Minimal construction impacts.	Minimal construction impacts.	No significant impacts would occur.
Socioeconomics			
Economic Impacts	No significant impacts would occur.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.

Affected Resource	Proposed Action	Alternative 1: Total Containment	No Action Alternative
Environmental Justice	No significant impacts would occur.	Impacts would be similar to those of the Proposed Action.	Potential threat to health of low income residents that drink groundwater.
Cultural Resources			
Historical, Architectural, Archaeological, and Cultural Sites	Due to the absence of cultural resources at or near the project site, there would be no significant impacts.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Aesthetic Resources	Impacts would not be significant due to the limited nature of new facilities.	No structures would be built. No significant impacts would occur.	No significant impacts would occur.
Biological Resources			
Wetlands	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Important Vegetation Types	Due to low density, there would be no significant impacts to yucca, cacti, or other plant species.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Endangered or Threatened Species and Critical Habitat	Due to low densities of wildlife and with implementation of avoidance measures, impacts would not be significant.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Environmentally Sensitive Areas	Due to the low density of wildlife and plant species, impacts would not be significant.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.

Water and Soil Resources			
Groundwater	Impacts would be beneficial due to advanced biological treatment.	No significant impacts would occur.	Significant adverse impacts to groundwater would occur due to an increased level of nitrates as nitrogen.
Soil	No significant impacts would occur.	No significant impacts would occur.	No significant impacts would occur.
Air Quality and Climate			
Air Quality	Impacts would be temporary and minor during construction. There would be no significant impacts during operations.	Impacts would be similar to those of the Proposed Action.	Significant impacts could occur due to odor.
Climate	There would be no significant impacts.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Other Concerns			
Hazardous Materials	Impacts would be temporary and minor during construction and operations.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Safety	Minimal impacts during construction, minor increase in risk to Indian Springs treatment works employees.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.
Noise	Noise would be temporary and intermittent during construction. Acoustical barriers would be in place during operations. No significant impacts would occur.	Impacts would be similar to those of the Proposed Action.	No significant impacts would occur.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the baseline conditions (affected environment) and anticipated impacts associated with the Proposed Action and project alternatives. Much of the information on baseline conditions at CAFB was derived from *the Final Nellis and Creech Air Force Bases Capital Improvements Program Environmental Assessment* (USAF 2008), used with permission from the USAF.

3.1 ANALYSIS APPROACH

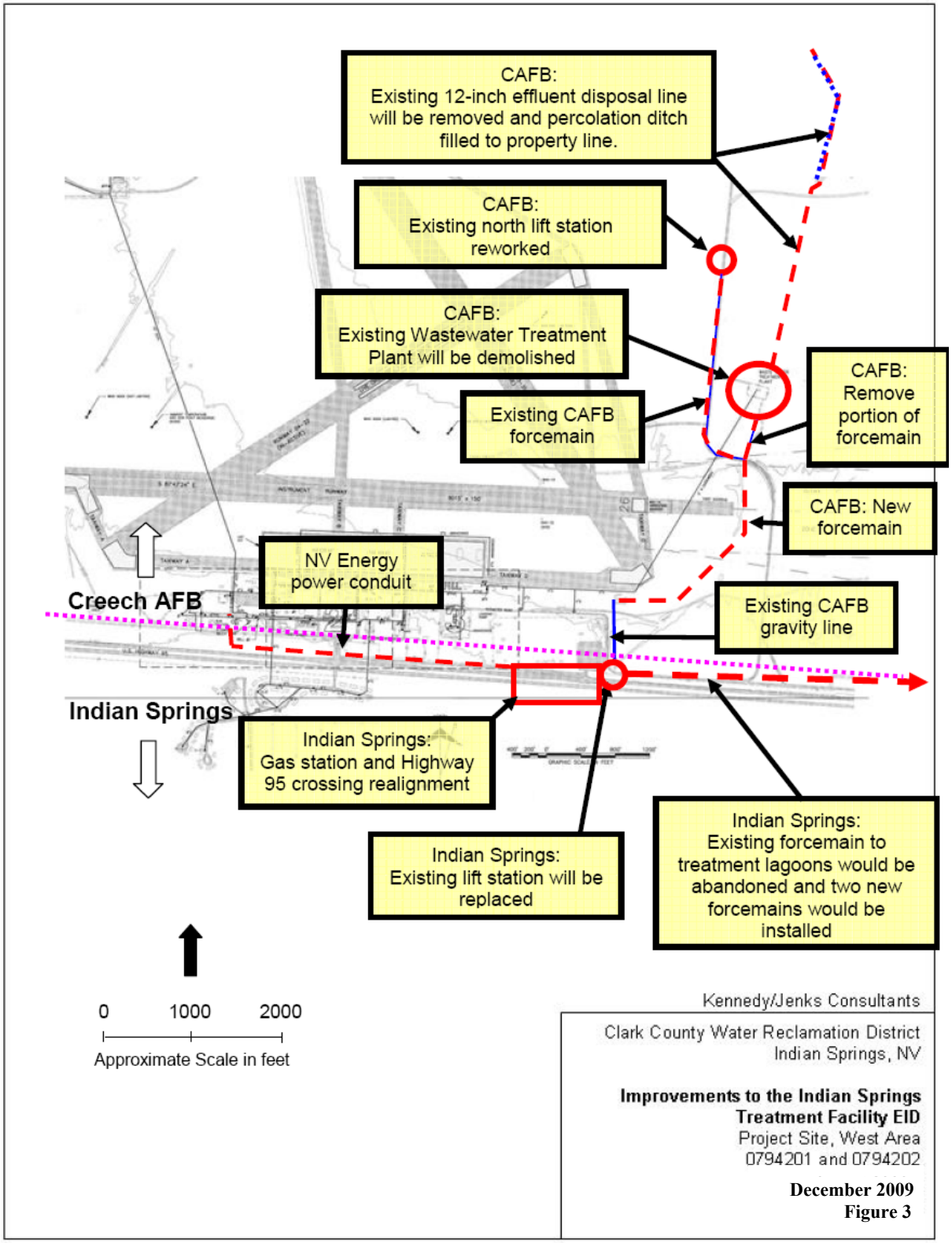
In the following sections, baseline conditions for each natural and cultural resource area is described for the project area (CAFB and Indian Springs), and the potential impacts of the project and project alternatives impacts are assessed. The affected environment and impacts sections were combined to allow for easier tracking of baseline versus proposed project conditions. Where appropriate, baseline conditions and impacts are also broken out by actions on CAFB and in Indian Springs to make it clearer where the impacts would occur. When the resource is common to both areas (e.g. for air quality and noise), the sections are combined as the "General Project Area."

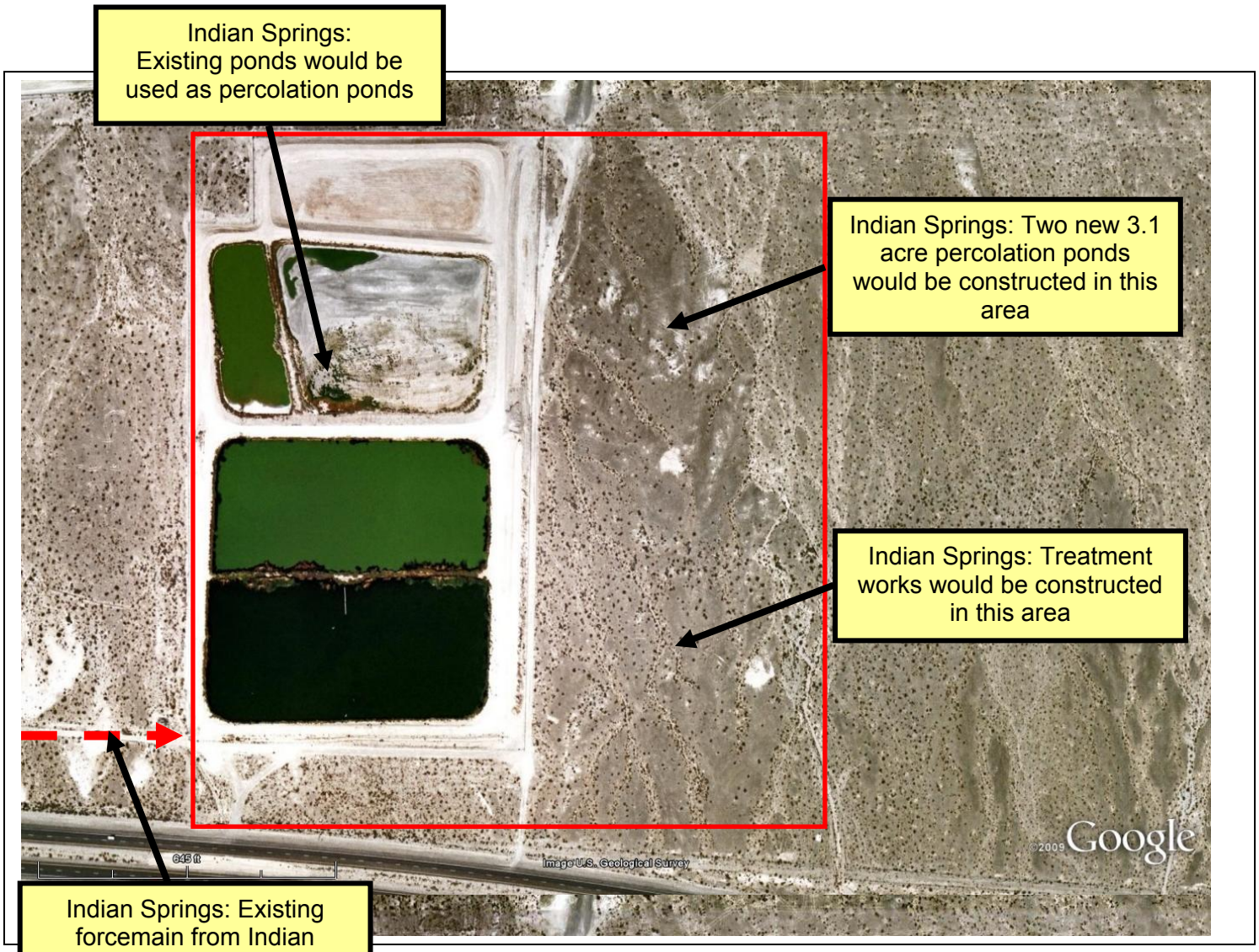
This section of the EA addresses potential impacts to the environmental resources within the project site for the Proposed Action, Alternative 1 (Total Containment) and the no-action alternative. An impact (consequence or effect) is defined as a modification to the human or natural environment that would result from the implementation of a project. The impacts can be either beneficial or adverse, and can be either directly related to the project or indirectly caused by the project. Direct impacts are those effects that are caused by the project and occur at the same time and place (40 CFR 1508.8[a]).Indirect impacts are those effects that are caused by the project and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR 1508.8[b]). The effects can be classified as temporary, short in duration (short-term), long lasting (long-term), or permanent.

Impacts can vary in degree or magnitude from a slightly noticeable change (minimal) to a total change in the environment. Significant impacts are those effects that would result in substantial changes to the environment (40 CFR 1508.27) and should receive the greatest attention in the decision-making process. Insignificant impacts are those that would result in minimal changes to the environment. The significance of the impacts presented in this EA is based upon existing regulatory standards, scientific, environmental knowledge, and best professional opinions.

3.1.1 General Project Area

The present facilities and Proposed Action are shown on Figures 3 and 4. The existing collection system is composed of 5.87 miles of pipe (between 4" and 14" diameter) and 76 manholes. Most pipelines are vitrified clay pipe (VCP) with the exception of 978 feet of reinforced concrete pipe (RCP) and a 5,542 foot asbestos-cement (AC) force main.


CAFB:
Existing 12-inch effluent disposal line will be removed and percolation ditch filled to property line.
CAFB:
Existing north lift station reworked
CAFB:
Existing Wastewater Treatment Plant will be demolished
Existing CAFB forcemain
CAFB:
Remove portion of forcemain
CAFB: New forcemain
NV Energy power conduit
Creech AFB
Existing CAFB gravity line
Indian Springs
Indian Springs:
Gas station and Highway 95 crossing realignment
Indian Springs:
Existing lift station will be replaced
Indian Springs:
Existing forcemain to treatment lagoons would be abandoned and two new forcemains would be installed
0
1000
2000
Approximate Scale in feet
Kennedy/Jenks Consultants
Clark County Water Reclamation District
Indian Springs, NV
Improvements to the Indian Springs Treatment Facility EID
Project Site, West Area
0794201 and 0794202
December 2009
Figure 3



0 300 600

Approximate Scale in feet

Kennedy/Jenks Consultants

Clark County Water Reclamation District
Indian Springs, NV

Improvements to the Indian Springs Treatment Facility EID
Project Site, East Area
0794201 and 0794202

December 2009
Figure 4

The existing lift station consists of two wet wells and one dry well. Each pump has a design capacity of 300 gpm. The primary wet well supplies the pumps with sewage and the second wet well serves as an additional emergency storage facility. The 8” AC force main runs 5,552 feet east, parallel to Highway 95. Some sections of this force main have been repaired with PVC pipe. This force main discharges into the center of the primary pond. Based on the results of a 2003 inspection, the lift station is in poor condition and ready for retirement. The AC force main also needs to be replaced.

The current treatment consists of four single stage stabilization ponds: Pond Nos. 1 and 2 are shallow, impermeable basins for primary and secondary stage oxidation of wastewater; Pond No. 3 consists of two separate shallow and impermeable component basins that provide the final stage of wastewater oxidation and some degree of liquid-solids separation; and Pond No. 4 is a permeable percolation basin. At average daily design flow rates, wastewater is hydraulically retained in Pond No. 1 for 45 days, then conveyed by gravity through 6-inch pipes to Pond No. 2 and retained for an additional 45 days. Ponds 3 and 4 are typically utilized as overflow ponds when the flow rate exceeds the ponds evaporation rates.

The ponds receive approximately 114,000 gpd. The primary ponds (1 and 2) are each approximately 3.9 acres in size and operate with about four feet of water depth. The overflow ponds are 1 to 1.5 acres in size and hold about one foot of water during the winter and are dry in the summer. The overall size of the site to be developed is about 51 acres, with the existing ponds occupying approximately half of that area. Figure 4 shows the overall site plan.

Based on the results of a 2003 inspection, there was previously extensive vegetation along the banks of the ponds and in some cases the soil cement liner was damaged. Much of the vegetation was removed, although root systems apparently run deep. A septic pumping truck is occasionally used to remove floating solids in the ponds as well as the lift station wet well.

The existing disposal facility consists of evaporation and percolation from the aforementioned ponds. Surrounding land uses other than Desert National Wildlife Refuge (DNWR) include the adjacent CAFB. There are 16 permitted septic units operating in southeast Indian Springs. A sewer expansion has been proposed for this area.

3.1.2 Resources Analyzed

The resources analyzed in this EA include:

- Socioeconomics
- Cultural Resources
- Biological Resources
- Water and Soil
- Air Quality
- Public Safety and USAF Safety, including Hazardous Materials Safety
- Noise.

3.1.3 Resources Eliminated from Further Analysis

Because the area is inland and in a closed basin, impacts on coastal zones and coastal barrier resources were not analyzed. According to the Federal Emergency Management Agency Flood Insurance Rate Map No. 32003C0875, the entire project area is located in a Flood Zone X, which corresponds to an area having less than a 0.2 percent chance of annual flooding. Hence, this area is not considered a floodplain, so floodplain impacts were not evaluated. Land use would not change under any of the alternatives, so land use was eliminated from further evaluation. None of the project alternatives put excessive demands on or otherwise change infrastructure (energy, roads, water, and communications); therefore this resource area was eliminated from further impacts analysis.

3.2 SOCIOECONOMICS

3.2.1 Affected Environment

3.2.1.1 General Project Area

The 2000 Census reported that the population of Indian Springs ("Census Designated Place") was 1,302. Of this amount, 1,178 individuals (90 percent) were reported to be Caucasian. The 2000 Census reported that the population for Clark County was 1,375,765. Of this amount, 72 percent were reported to be Caucasian. In 1999, 10.7 percent of Town residents and 10.8 percent of County residents were reported to be living below the poverty line.

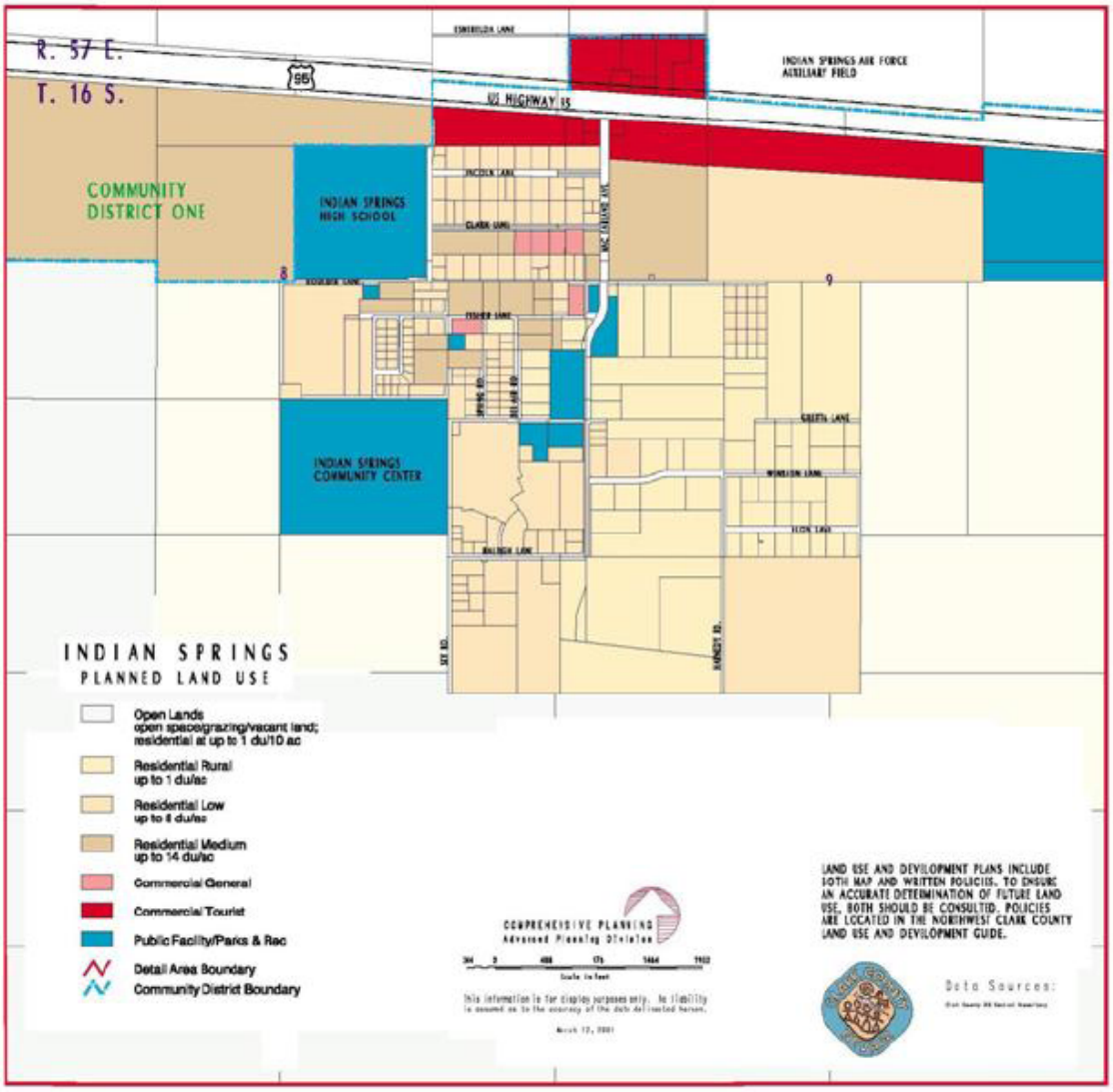
The Clark County Department of Comprehensive Planning (CCDCP) reported that the 2005 population of the Town was 1,692 people. This population was expected to rise at a rate of approximately two percent per year. The CCDCP projected that the population would be 2,602 residents in the year 2025.

The Town is located in a rural setting approximately 45 miles northwest of Las Vegas, NV. Figure 1 shows the location of the Town and surrounding areas, and Figure 2 is a topographic map of the Town. The project site location is displayed on Figure 2. Figures 3 and 4 show the location of the project's major components.

Major employment fields are as follows: Arts, entertainment, recreation, accommodation and food services (27%), Construction (20%), Professional, scientific, management, administrative, and waste management services (17%).10% are employed in the Education, Health and Social Services fields. Only 3% of the population is employed by the Armed Forces.

The three largest economic activities in the Town are the Service Industry (including hotels and gaming), Management, and Construction.

Figure 5 is the 1996 Land Use Map for the Town. It shows that the majority of the town is classified as either residential rural (up to one dwelling unit per acre (du/acre) or residential low (up to eight du/acre). The remaining area is constituted by residential medium (14 du/acre), commercial-tourist (hotel/casino), commercial-general, and public facilities.



Kennedy/Jenks Consultants

Clark County Water Reclamation District
Indian Springs, NV

Improvements to the Indian Springs Treatment Facility EID
Land Use Map
0794201 and 0794202
December 2009
Figure 5

According to the CCDCP, 81 percent of the population resides in mobile homes, eight percent in multi-family residences, eight percent in single family homes, and three percent in recreational vehicles (RVs), vans, etc. Approximately 43.3% of the housing units are renter occupied and 56.7% are owner occupied.

CAFB, located north of the Town and Highway 95, employs approximately 3,000 workers.

3.2.2 Environmental Consequences

3.2.2.1 General Project Area

3.2.2.1.1 Proposed Action

Construction activities would result in a temporary demand for approximately 10-15 employees for duration of 16 months. Employment would be supplied from the existing labor pool in the region.

Operations would add up to three jobs. This negligible increase in local employment would be easily accommodated by the existing housing pool. Impacts would not be significant.

Discontinued operation of the CAFB WWTP may eliminate current operator positions at the Base; however, WWTP staff would likely be reassigned to other duties.

The project is not located where there is a disproportionate minority population or low income workers. Therefore, the Proposed Project would not have insignificant impacts related to socioeconomic or environmental justice considerations.

3.2.2.1.2 Alternative 1: Total Containment

Impacts would be the same or less as under the Proposed Project. While operations would be less complex than a treatment plant, careful management of water disposal may require a similar labor effort.

3.2.2.1.3 No Action Alternative

There would be no significant impact to socioeconomics as a result of the No Action Alternative.

3.3 CULTURAL RESOURCES

Cultural resources include landmarks, historic and pre-historic structures and artifacts, and visual aesthetics.

3.3.1 Affected Environment

3.3.1.1 Creech AFB

3.3.1.1.1 Landmarks

There are no landmarks in the Area of Potential Effect on CAFB.

3.3.1.1.2 Historic, Prehistoric, Architectural, Archaeological and Cultural Resources

Section 106 of the *NHPA of 1966* requires that Federal agencies take into account the effects of their undertakings on historic properties. Efforts to identify and evaluate cultural resource properties for the following projects according to 36 CFR 800.4 are described in a cultural resources inventory report titled *Archaeological Survey of the Indian Springs Air Force Auxiliary Field*.

As a result of the inventory documented in the cultural resource report, no archaeological properties were found within the Area of Potential Effect that includes this project location. The report was forwarded to the Nevada State Historic Preservation Office (SHPO) for review. SHPO submitted concurrence letters to the USAF, dated 26 March and 5 Jul 1996, with concurrence on determinations of no eligible sites and acceptance of the results of the report. The letter indicated that those areas not within the Area of Potential Effect of the eligible sites would have no effect on projects using such portions. This concluded Section 106 consultation.

3.3.1.1.3 Aesthetic Resources

CAFB does not provide documented aesthetic benefits to the area; however, the Base helps preserve the surrounding mountains and undeveloped desert.

3.3.1.1.4 Native American Interests

Regional Native Americans have expressed interest in use and preservation of traditional gathering areas in the region, including portions of CAFB.

3.3.1.2 Indian Springs

3.3.1.2.1 Landmarks

National Natural Landmarks: Based on a review of the National Parks Service web page of National Natural Landmarks (http://www.nature.nps.gov/nnl/Registry/USA_Map/States/Nevada/nevada.cfm), there is no National Natural Landmark in the vicinity of Indian Springs. The closest National Natural Landmark is The Timber Mountain Caldera National Natural Landmark located on the Nevada Test and Training Range (NTTR) in Nye County.

Based on a review of the National Parks Service web page of National Historic Landmarks (http://tps.cr.nps.gov/nhl/default.cfm), there is no National Historic Landmark in the vicinity of Indian Springs.

3.3.1.2.2 Historic, Prehistoric, Architectural, Archaeological and Cultural Resources

On 21 December 2007, 3 July 2009 and 31 July, archaeologists from Knight & Leavitt conducted a field inventory of the Proposed Action area in Indian Springs (Knight and Leavitt 2009). The field survey included pedestrian transects of the intended project area to record any potential cultural resources that may be within or adjacent to project site boundaries.

During the inventory for the current project, no cultural resources were encountered. The Proposed Action is situated on vacant land that is currently undeveloped or within the footprint of the existing WWTF. The right-of-way of the old Las Vegas and Tonopah Railroad was located at the very south end of the project area. All that remains of the historic railroad is a linear depression. This railroad was previously surveyed and recorded.

A consultation with the State Historic Preservation Office records at the Harry Reid Center at the University of Nevada-Las Vegas (UNLV) was conducted on 20 December 2007 to determine the extent and nature of previous cultural resource surveys in and near the project area. There are 21 historic sites located in the same township and range as the project area (Knight & Leavitt 2008). These include Indian Springs and associated ranches, houses, wells, stores, and a weather station.

A previous survey of significant historic structures shows that Tim Springs Petroglyphs is the closest described structure, located 12.1 miles north-northwest from the project area. The site contains both petroglyphs and pictographs that are in good condition. Tim Springs Petroglyphs is also the closest site listed on the National Register of Historic Places (NRHP).

None of these resources are in proximity of the project or are anticipated to be impacted by the project.

3.3.1.2.3 Aesthetic Resources

The facility is located in the Mojave Desert biome dominated by bush scrub. There are clear views of nearby desert mountain ranges such as the Spring Range, Spotted Range, Pintwater Range and Sheep Range.

3.3.1.2.4 Native American Interests

According to the Nevada Department of Transportation Indian Reservations and Colonies in Nevada Map (NDOT 2007), the closest reservation to Indian Springs is the Las Vegas Paiute Tribe reservation located about 25 miles southeast of town on Highway 95. The larger Moapa River Indian Reservation is located about 50 miles east of Indian Springs.

3.3.2 Environmental Consequences

3.3.2.1 Creech AFB

3.3.2.1.1 Landmarks

Because there are no documented protected landmarks in the vicinity of the project area, there would be no significant impacts to landmarks on CAFB under any of the project alternatives.

3.3.2.1.2 Historic, Prehistoric, Architectural, Archaeological and Cultural Resources

3.3.2.1.2.1 Proposed Action

An inventory and consultation with SHPO in 1996 determined there are no eligible cultural resources present on CAFB. There would be no significant impacts. The Nellis AFB Integrated Cultural Resources Management Plan provides direction to federal and contracted employees that if any artifacts are located during operations, the 99 CES/CEA Manger or the Archaeologist (99 CES/CEANS) (652-9365) must be contacted and construction delayed.

3.3.2.1.2.2 Alternative 1: Total Containment

This alternative is expected to have the same no significant impact effect as the Proposed Action.

3.3.2.1.2.3 No Action Alternative

An inventory and consultation with SHPO in 1996 determined there are no eligible resources, thus no significant impacts.

3.3.2.1.3 Aesthetic Resources

3.3.2.1.3.1 Proposed Action

Demolition of the existing WWTP is not expected to affect visual aesthetics at CAFB.

3.3.2.1.3.2 Alternative 1: Total Containment

No new structures would be built above grade at CAFB under this alternative. There would be no significant impacts to aesthetic resources.

3.3.2.1.3.3 No Action Alternative

There would be no changes to the aesthetic quality of the project site as a result of this alternative. There would be no significant impact.

3.3.2.1.4 Native American Interests

Nellis AFB manages a Native American Program since 1996 as a foundation for government to government consultation. The descendants of 17 tribes with ancestral ties to the NTTR participate in fieldwork for Section 106 and 110 (NHPA) projects. They identify locations of intensive cultural activities of the past and present, which includes Kawich Range in which Nellis AFB sponsored a pine nut harvest in 2005. The data is confidential. They have not identified any areas of intensive cultural activities in the Area of Potential Effect at Creech AFB.

3.3.2.2 Indian Springs

3.3.2.2.1 Landmarks

Because there are no documented protected landmarks in the vicinity of the project area, there would be no significant impacts to landmarks in the Indian Springs area of the project under any of the project alternatives.

3.3.2.2.2 Historic, Prehistoric, Architectural, Archaeological and Cultural Resources

3.3.2.2.2.1 Proposed Action

In August 2009, the US EPA contacted the Nevada SHPO office and provided copies of the cultural resource investigation reports for the project area. In a letter dated 18 August 2009 (SHPO 2009), SHPO concurred with USEPA's determination that no historic properties were found within the project area of potential effects.

However, the requirement to stop work and notify SHPO if cultural resources are discovered during construction will apply for work in Indian Springs.

3.3.2.2.2.2 Alternative 1: Total Containment

Under this alternative, additional land would be disturbed to create sufficient pond area for evaporative disposal. This additional area was not assessed for cultural resources, so the additional impacts are unknown.

3.3.2.2.2.3 No Action Alternative

There would be no changes to the project site. There would be no significant impact to historical, architectural, archaeological, or cultural resources.

3.3.2.2.3 Aesthetic Resources

3.3.2.2.3.1 Proposed Action

The plant structures are not expected to exceed twenty feet in height (above grade). Consequently, there would be no significant impact to the views of neighboring mountains or other aesthetic resources of the community. If the photovoltaic energy facility option is exercised, up to eight acres of existing open space will be covered with photovoltaic panels

which may be visible from the highway. The panels would be no more than 10 feet high when fully oriented south. Given the current use of the property for wastewater treatment lagoons (and in the future percolation basins), this change will not significantly change site aesthetics.

3.3.2.2.3.2 Alternative 1: Total Containment

No new structures would be built above grade under this alternative. There would be no significant impacts to aesthetic resources.

3.3.2.2.3.3 No Action Alternative

There would be no changes to the aesthetic quality of the project site as a result of this alternative. There would be no significant impact.

3.3.2.2.4 Native American Interests

Because the project is within Indian Springs and the existing WWTF property, the project is not likely to significantly affect Native American interests in the area. EPA conducted a consultation with SHPO and solicited comments from local Native American Tribes. To date, no response has been received from the Tribes contacted.

3.4 BIOLOGICAL RESOURCES

3.4.1 Affected Environment

3.4.1.1 General Project Area

3.4.1.1.1 Habitat and Vegetation

As described in the biological resources reports for CAFB and the Indian Springs project area (Dames and Moore 1996 and PBS&J 2008, respectively), the project area is located in the Mojave Desert biome. Vegetation communities within the Mojave Desert biome that are represented in the project area are characterized as Mojave Creosote Bush Scrub and Mojave Desert Saltbush Scrub.

Mojave Creosote Bush Scrub community is the dominant community. The Mojave creosote bush scrub includes creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and cacti and yucca species. This community is located in sandy well-drained soils commonly found on bajadas and low hills. The shrubs are commonly spaced anywhere from two to eight feet apart. Saltbush Scrub is primarily located along the western portion of the Proposed Action (within the CAFB). This community is dominated by four-wing saltbush (*Atriplex canescens*) and commonly occurs on well-drained saline soils. Table 2 lists the common plant species that are found throughout the area.

Table 2. Vegetative Species Observed Near the Proposed Action Site

Scientific Name	Common Name
Ambrosia dumosa	White bursage
Amsinckia tessellata	Bristly fiddleneck
Atriplex canescens	Four-wing saltbush
Chorizanthe rigida	Spiny chorizanthe
Echinocactus polycephalus	Cottontop cactus
Echinocereus engelmannii	Hedgehog cactus
Ephedra nevadensis	Desert tea
Eriogonum inflatum	Desert trumpets
Erodium cicutarium	Red-stem stork's bill
Krameria erecta	Little-leaf ratany
Opuntia basilaris	Beavertail cactus
Opuntia echinocarpa	Silver cholla
Opuntia ramosissima	Pencil cholla
Plantago ovata	Common plantain
Pleuraphis rigida	Galleta grass
Salazaria mexicana	Paper bag bush
Salsola tragus	Russian thistle
Yucca schidigera	Mojave yucca

The facility is bordered on the north by the DNWR, a portion of which includes the CAFB. The DNWR is home to a variety of threatened and endangered species, as well as some species of concern.

The introduced species Russian thistle *(Salsola tragus)* was found in disturbed portions of the entire study area, but especially in Area D. In disturbed, moist zones of Area D, localized phreatophyte thickets of salt cedar and mesquite were identified.

3.4.1.1.2 Endangered or Threatened Species

The only federally listed plant species in Clark County is the Las Vegas buckwheat (*Eriogonum corymbosum var. nilesil*), which is listed as a Candidate species (USFWS 2008).

The following federally listed Endangered or Threatened animal species are known to occur in Clark County, NV (USFWS 2008) :

a. Humpback Chub (*Gilia cypha*) - Endangered
b. Virgin River Chub (*Gila seminude)* - Endangered
c. Razorback Sucker (*Xyrauchen texanus*) - Endangered
d. Woundfin (*Plagopterus argentissimus*) - Endangered

e. Pahrump Poolfish *(Empetrichthys latos latos)* - Endangered

f. Moapa Dace (*Moapa coriacea) – Endangered*

g. *Lahontan cutthroat trout (Oncorhynchus clarkia henshawi)* – Threatened

h. *Colorado pike minnow (Ptychocheilus lucius) - Endangered*

i. Southwestern willow flycatcher (*Empidonax trallii estimus*) - Endangered

j. Yuma Clapper Rail (*Rallus longirostris yumanensis*) - Endangered

k. Bonytail Chub (*Gila elegans)* - Endangered

l. Desert Tortoise (*Gopherus agassizii)* - Threatened.

Of these Endangered and threatened animal species only the desert tortoise (*Gopherus agassizii*), was determined to be potentially present on or near the project site according to the biological resources report (PBS&J 2008).

In addition, the American bald eagle (*Haliaeetus leucocephalus*) is known to be present in Clark County. The bald eagle was removed from the USF&WS list of endangered or threatened species in August 2007. However, the species is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Both federal laws prohibit "taking" -- killing, selling or otherwise harming eagles, their nests or eggs. The U.S. Fish and Wildlife Service has published regulations implementing the Bald and Golden Eagle Protection Act and published a set of National Bald Eagle Management Guidelines. These measures are designed to give landowners and others clear guidance on how to ensure that actions they take on their property are consistent with the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Other special status wildlife species that may potentially occur on the project include the the western burrowing owl (*Athene cunicularia hypugea*), the Gila monster (*Heloderma suspectum cinctum*), and migratory birds.

Burrowing owls are a sensitive species, and are also protected under the Migratory Bird Treaty Act (16 USC 703-711). Per Nevada Administrative Code 503.080, the Gila monster (*Heloderma suspectum*) is classified as a Protected reptile.

According to the biological resources report for Indian Springs (PBS&J 2008), the observed density of cacti and yucca species was relatively low within the Proposed Action site and was estimated to be 0.5 plants per acre. Species observed on the project site included beavertail (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), cottontop (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmannii*), and Mojave yucca (*Yucca schidigera*). None of these plants are federally listed as Threatened or Endangered.

Evidence of desert tortoise and burrowing owls were not observed within the Indian Springs WWTF during the biological resources survey. There is no suitable habitat for these species within the developed portion of Indian Springs where pipeline work will be conducted.

According to Dames and Moore 1996, Merriam's bear paw poppy and chuckwalla are considered by the U.S. Fish and Wildlife Service (USFWS) to be "sensitive species." Sensitive species include those formerly referred to as Category 1 and 2 candidates for listing. These species are generally thought to be rare or declining, but are not currently considered candidates for listing.

The *Biological Resources Technical Memorandum* for what is now CAFB (Dames and Moore 1996) includes a large area. However, the proposed WWTP decommissioning and pipeline portions of the project fall only within Study Area D as identified in the memorandum. Area D was subjected to nearly complete coverage with the exception of the extreme eastern end of the area which includes the project area. However, Dames and Moore indicate that, by sampling more than ten percent of the roads in each area, it is unlikely that sensitive species present along the margins were not represented by the surveys. Furthermore, the frequency at which such species were observed is indicative of the density of their occurrence in the surrounding environment.

In a letter dated 30 June 2003, the USFWS issued comments on the Draft Environmental Assessment (EA)for the Predator Force Structure Changes at Indian Springs Air Force Auxiliary Field (now CAFB), Clark County, Nevada. The comments reference the Programmatic Biological Opinion (Service File No. 1-5-02-F-522) for activities associated with South Range of NAFB, NTTR, and the Nevada Training Initiative, including Indian Springs Air Force Auxiliary Field

In a letter dated 30 June 2004, the USFWS issued an amendment to the Programmatic Biological Opinion for Activities on the South Range of NAFB, NTTR and the Nevada Training Initiative, Clark and Lincoln Counties, Nevada. This amendment allows for use of tortoise monitoring in lieu of installing exclusionary fencing. This amendment includes the following conditions:

> *The Nevada Training Initiative Project (640 acres), Target 62-6, and new proposed project that would involve surface disturbance will be cleared of desert tortoises in accordance with Term and Condition 3.b. In addition to the project site clearance, on a case-by-case basis, a perimeter around the project area will also be cleared as determined by the Nellis AFB Natural Resources Manager and Service. The determination to conduct perimeter clearance will be based on the quality of desert tortoise habitat in the project area and/or likelihood of desert tortoises appearing on the project site. Desert tortoises found and removed from the project site may be fitted with radiotelemetry devices as determined on a case-by-case basis. Telemetered tortoises will be monitored and data collected at least until project construction is completed to determine if tortoise return to the area of capture. Telemetry data will be provided to the Service within 30 days of the conclusion of telemetry monitoring activities. Tortoises that return will be moved out of harm's way in accordance with Term and Condition 3.b. Tortoise that are fond in harm's way shall continue to be captured, moved, and released until surface disturbance ceases. Tortoises may be moved up to 1 mile from point of capture. A tortoise monitor will be present on the project sites during all project construction/earth-moving activities until the project is completed.*

The USAF concluded that the project is consistent with the types of projects allowed under the Programmatic Biological Opinion and will submit project information to USFWs in accordance with the conditions of the Programmatic Biological Opinion covering CAFB.

A Mariposa lily *(Calochortus* sp.) was found by Dames and Moore during field surveys of the CAFB property in 1996. Unidentifiable to species at that time of year (December), the plant is potentially the alkali Mariposa lily *(Calochortus striatus),* a species of concern. Although distribution information from the literature indicates that the most likely Mariposa lily in this location is *Calochortus flexulosus,* which is not protected at this time, the finding represents a sensitive species with the potential for occurrence in the study area

With the exception of the desert tortoise, Gila monster, and burrowing owl, no other special-status plant or animal species are known or likely to occur in the areas subject to ground disturbance at CAFB. Desert tortoise occur on land surrounding CAFB, but were not detected in a survey of the airfield area (NAFB 1996), and their occurrence is unlikely given the level of disturbance and activity. Burrowing owls have been observed in burrows in the disturbed soil at the north end of the runway at Creech AFB (NAFB 1996).

Clark County has developed a *Multiple Species Habitat Conservation Plan* (MSHCP) that covers all non-Federal (private, municipal, state) lands within Clark County and NDOT activities in areas within Clark, Nye, Lincoln and Esmeralda Counties south of the 38th parallel and below 5,000 feet in elevation. This plan includes incidental take permitting for the federally listed Desert tortoise. This plan has been approved in a Biological Opinion from the USFWS. Nevada Department of Wildlife (NDOW) referenced this plan in a 6 October 2006 letter regarding project impacts (provided in Appendix A). NDOW also included recommended actions for minimizing impacts to burrowing owls, migratory birds, and the Gila monster.

In Summary, only the desert tortoise, Gila monster, and burrowing owl are specially protected species of concern for the entire project area. The alkali Mariposa lily may be a plant of concern on CAFB.

3.4.1.1.3 Wetlands

Based on a review of the National Wetland Inventory for the Indian Springs area and the Integrated Natural Resources Management Plan, there are no jurisdictional wetlands within the project area.

3.4.1.1.4 Migratory Birds

Potential habitat does exist for migratory birds. Migratory birds observed during surveys conducted in by PBS&J January 2008 included American coots (*Fulica americana*), mallard ducks (*Anas platyrhynchos*), common ravens (*Corvus corax*), and sparrows (unknown species). Treatment ponds that exist in the project area are likely to attract more migratory bird species during the spring and summer months (PBS&J 2008). While the Proposed Action would eliminate some existing deeper water pond area, the remaining percolation basin water would be treated and therefore of higher quality. There would also be additional open basin area. This would provide a benefit to the migratory bird population in terms of water quality, but may have

a minimal impact in terms of total water available for migratory water fowl. Because of the proximity to CAFB flight operations, discouraging migratory bird congregation in the area would help prevent bird fatalities and injuries associated with bird-aircraft strikes, as well as improve public and pilot safety. The project will adhere to requirements of FAA Advisory Circular 150/5200-33B, dated 8/28/2007, "*Hazardous Wildlife Attractants on or Near Airports*."

3.4.2 Environmental Consequences

3.4.2.1 General Project Area

3.4.2.1.1 Habitat and Vegetation

3.4.2.1.1.1 Proposed Action

Filling in the percolation ditch may result in some loss of marginal habitat. Demolition of the CAFB WWTP may create a small amount of new open space. The impacts of the pipeline construction are temporary, and habitat is anticipated to return to baseline conditions through natural recruitment over time. Therefore, impacts to habitat and vegetation are not significant.

Due to the low plant density, no significant impacts to plant species would occur in Indian Springs or at the WWTF. There would be some loss of habitat associated with construction and operation of the additional 6.2 acres of percolation ponds on WWTF property, however, given the amount of similar habitat in the area, this loss would not be significant. Placement of solar panels on up to 8 acres of Indian Springs WWTF property would shade out plant growth beneath the panels; however, given the low density of existing plants, and large amounts of open space surrounding the WWTF property; this loss of habitat would not be significant.

3.4.2.1.1.2 Alternative 1: Total Containment

Under this alternative, a greater area of vegetation and habitat loss would occur in Indian Springs because more pond area would be needed for evaporative disposal.

3.4.2.1.1.3 No Action Alternative

Under the No Action Alternative, there would be no change to baseline habitat conditions.

3.4.2.1.2 Endangered or Threatened Species

Because there is no natural open water near any areas of the project (only sewage treatment and percolation ponds), none of the special status fish species described above would be impacted on Indian Springs or CAFB under any of the project alternatives.

Given the low density of vegetation present in the project areas and absence of finding these species during site surveys, none of the special status plants listed above would be impacted on Indian Springs or CAFB under any of the project alternatives.

Per the Programmatic Biological Opinion for CAFB, prior to the initiation of any project construction, surveys coordinated through the NAFB Natural Resources Manager would be conducted to determine the presence of desert tortoises, Gila monsters, burrowing owls or other special status plant and wildlife species. Therefore, there would be no significant impacts to Endangered or Threatened species under any of the project alternatives.

The project areas not on CAFB would follow the requirements of the *MSHCP;* therefore, under any of the proposed alternatives, no Endangered or Threatened species would be impacted under any of the project alternatives.

3.4.2.1.3 Wetlands

Because there are no jurisdictional wetlands within the area of potential effect at CAFB or in Indian Springs, there would be no significant impact to wetlands under any of the project alternatives.

3.4.2.1.4 Migratory Birds

3.4.2.1.4.1 Proposed Action

At CAFB, the Natural Resources Manager would determine actions to meet the requirements of the Programmatic Biological Opinion. If any migratory birds and/or nests are encountered during construction on the Indian Springs portion of the project, a protective buffer would be delineated pursuant to provisions established in the response letters from the USFWS and the NDOW (see Appendix A). Therefore, impacts would not be significant.

3.4.2.1.4.2 Alternative 1: Total Containment

Under this alternative, the ponds would have to cover a larger area to accommodate evaporative disposal. This alternative would create large areas of open water that could attract migratory water fowl; however the water quality would be poorer and additional takings of migratory birds may result from aircraft bird strikes.

3.4.2.1.4.3 No Action Alternative

There would be no changes at the project site from current conditions. There would be no significant impacts to species and/or habitats under this alternative.

3.5 WATER AND SOIL RESOURCES

3.5.1 Affected Environment

3.5.1.1 General Project Area

3.5.1.1.1 Ground Water

Indian Springs is located within the boundary of the Ash Meadows groundwater basin. Originating in the Spring Mountains, the groundwater in the Indian Springs Valley flows northwest towards the NTTR and then turns southwest towards the Ash Meadows National Wildlife Refuge. The USGS estimates the regional groundwater aquifer to be located approximately 100 to 200 feet below ground level. In the Town, however, the aquifer rises to the surface as evidenced by the natural springs.

Natural springs on the south side of Indian Springs form several small pools, which are drained through evaporation, percolation, and irrigation use and therefore do not have natural runoff. The springs and ponds are approximately 4,000 feet south of the closest portion of the project. The existing Indian Springs WWTF facility ponds are the only other surface water in the project vicinity.

The CAFB water system includes three wells: Wells 62-1, 106-2, and CAFB Well 3 which provide potable water to the base. The wells are monitored for compliance with drinking water standards on a regular basis by personnel from the Bio-environmental Group at NAFB. The USAF has authorization from the State of Nevada Engineer to pump a total of approximately 62.7 million gallons per year (gpy) from the three groundwater wells. In 2006, demand on the CAFB water supply system was estimated at an annual average of 88,000 gpd (approximately 32 million gpy), or 51 percent of its total allotted capacity.

The sources of water at Indian Springs are groundwater pumped from wells and artesian spring water used for irrigation.

The Indian Springs WWTF is permitted to discharge up to 10 mg/l of nitrate as nitrogen, carbonaceous biological oxygen demand (CBOD), and total suspended solids (TSS). The existing plant influent water contains nitrate-nitrogen levels of 35-50 mg/l. Since there is no biological treatment, similar concentrations are discharged to the infiltration basins. The aquifer is reported to be at a depth of approximately 100 to 200 feet below grade. However, the aquifer rises to the surface at Indian Springs, which are located upgradient of the ponds, approximately 1.5 miles south-west of the site.

Test bores on the site indicate moist soil and groundwater as shallow at 30 feet below ground (Preliminary Design Report). Percolation tests conducted at these bores measured infiltration rates of between two to seven minutes per inch.

Presently treated water is disposed via evaporation and also percolation from the ponds. The receiving waters, groundwater of the State, are recharged under direct influence from the percolation.

Because the regional soils are composed primarily of alluvium that allows for rapid infiltration rates, it is assumed that the wastewater nitrate levels reach the aquifer in concentrations similar to those leaving the existing plant. Monitoring wells are located adjacent to the facility. Total nitrogen concentrations in the wells have been rising and it is suspected that this is due to inadequate treatment at the existing facility. Table 3 below shows the change in water quality in the two monitoring wells over the past decade.

Table 3: Groundwater Monitoring Nitrogen Data

Sampling Location	Date	Constituent	Result
Monitoring Well 2	07/29/93	NITRATE (AS N)	0.5 mg/l
	04/06/99	NITRATE (AS N)	0 *
	10/05/99	NITRATE (AS N)	0 *
	12/13/00	NITRATE (AS N)	1.2 mg/l
	12/28/01	NITRATE (AS N)	2.5 mg/l
	12/23/02	NITRATE (AS N)	0 *
	12/09/03	NITRATE (AS N)	0 *
	08/11/04	NITRATE (AS N)	0.5 mg/l
	12/13/96	NITRATE+NITRITE (AS N)	0.5 mg/l
	04/06/99	NITRATE+NITRITE (AS N)	0 *
	12/28/01	NITRATE+NITRITE (AS N)	2.5 mg/l
	08/11/04	NITRATE+NITRITE (AS N)	0.5 mg/l
	04/06/99	NITRITE (AS N)	0 *
	12/28/01	NITRITE (AS N)	0 * mg/l
	08/11/04	NITRITE (AS N)	0 *
Monitoring Well 2	07/29/93	NITRATE (AS N)	0.5 mg/l
	04/06/99	NITRATE (AS N)	0 *
	10/05/99	NITRATE (AS N)	0 *
	12/28/01	NITRATE (AS N)	1.8 mg/l
	12/23/02	NITRATE (AS N)	0 *
	12/09/03	NITRATE (AS N)	0 *
	08/11/04	NITRATE (AS N)	0 *
	12/13/96	NITRATE+NITRITE (AS N)	0.6 mg/l
	04/06/99	NITRATE+NITRITE (AS N)	0 *
	12/28/01	NITRATE+NITRITE (AS N)	1.8 mg/l
	08/11/04	NITRATE+NITRITE (AS N)	0 *
	04/06/99	NITRITE (AS N)	0 *
	12/28/01	NITRITE (AS N)	0 * mg/l
	08/11/04	NITRITE (AS N)	0 *

* Values were less than the detection limit.

3.5.1.1.2 Soil

Because of the desert environment, soil quality at Indian Springs and CAFB is generally poor, and is not suitable for farming without intensive irrigation and fertilization. There are no known mineral resources in the project area on CAFB or Indian Springs.

3.5.2 Environmental Consequences

3.5.2.1 General Project Area

3.5.2.1.1 Groundwater

3.5.2.1.1.1 Proposed Action

The groundwater would be recharged with treated wastewater. The advanced biological treatment resulting in the reduction of CBOD and total nitrogen in the effluent is expected to improve the groundwater quality. The proposed discharge would meet the permitted requirement of 10 mg/l nitrates as nitrogen, CBOD, and TSS. Therefore the impact to groundwater would be positive, allowing recharge without impacting groundwater quality.

3.5.2.1.1.2 Alternative 1: Total Containment

Under this alternative, there would be no treatment of the wastewater. However, the risk to groundwater would be reduced due to the 100 percent evaporative system. Impacts to groundwater would not be significant.

3.5.2.1.1.3 No Action Alternative

Since this alternative would not involve any treatment or improvement of any kind, groundwater downstream would continue to have excessive levels of nitrate-nitrogen. The NDEP directive would not be met. Impacts would be potentially significant to groundwater.

3.5.2.1.2 Soil

3.5.2.1.2.1 Proposed Action

The footprint of the existing CAFB WWTP would be restored to bare ground. Because there is no high value farm land in the area and no known mineral resources in the vicinity of the project, there would be no significant impacts to soil resources at CAFB or Indian Springs under any of the project alternatives.

About 6.2 acres of area would be disturbed to create additional percolation/evaporation basins at the Indian Springs WWTF and the existing treatment lagoons would be scarified and converted to percolation/evaporation basins. In addition, up to 8 acres of land would be covered with photovoltaic panels if the solar energy option is exercised. Because the WWTF is already owned by CCWRD and designated for a treatment facility, no significant loss of soil or mineral resources will occur under the proposed Action.

3.5.2.1.2.2 Alternative 1: Total Containment

The soil impacts at CAFB would be the same as under the Proposed Action. At Indian Springs, an additional 85 acres of land would have to be converted to treatment/evaporation basins. This would require acquiring additional land, probably adjacent land currently owned by the Bureau of Land Management. Soil and mineral resources at this adjacent property are unknown; however if resources are present, they would not be readily accessible if treatment/evaporation basins are constructed Thus, there is a potential for soil and mineral resource impacts under Alternative 1: Total Containment.

3.5.2.1.2.3 No Action Alternative

There would be no impact to mineral or soil resources under the No Action Alternative.

3.6 AIR QUALITY

3.6.1 Affected Environment

3.6.1.1 General Project Area

Indian Springs is located 45 miles northwest of Las Vegas at an elevation of about 3,100 feet, in a desert setting. The Clark County Department of Air Quality and Environmental Management (DAQEM) monitors and regulates air emissions for the project area. The existing air quality in Clark County is considered in attainment or unclassified for all criteria pollutants (40CFR 81.329, September, 2004) except for 8 hour ozone (O_3), particulate matter 10 microns or less (PM_{10}) and carbon monoxide(CO). Clark County has been in attainment for CO since 2005, and has an EPA accepted State Implementation Plan which outlines how it will maintain its attainment status. No air quality monitoring stations are known to be located in the vicinity of Indian Springs; however according to USAF, CAFB is in attainment for all air quality standards. In a recent communication to the USAF (DAQEM 2009), DAQEM stated that Indian Springs, NV is currently in attainment for all criteria pollutants. The National Ambient Air Quality Standards as cited in the Clark County Air Quality Regulations are shown in Table 4.

Table 4: National Ambient Air Quality Standards

Pollutant	Standard	Standard Value*	Standard Type
Carbon Monoxide (CO)	8-Hour Average	9 ppm (10 mg/m^3)	Primary
	1-Hour Average	35 ppm (40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 µg/m^3)	Primary & Secondary
Ozone (O_3)	1-Hour Average	0.12 ppm (235 µg/m^3)	Primary & Sec.
	8-Hour Average	0.08 ppm (157 µg/m^3)	Primary & Sec.
Lead (Pb)	Quarterly Average	1.5 µg/m^3)	Primary & Sec.
Particulate Matter (PM_{10})	Annual Arithmetic Mean	50 µg/m^3)	Primary & Sec.
	24-Hour Average	150 µg/m^3)	Primary & Sec.
Particulate Matter (PM_{10})	Annual Arithmetic Mean	15 µg/m^3)	Primary & Sec.
	24-Hour Average	65 µg/m^3)	Primary & Sec.
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.03 ppm (80 µg/m^3)	Primary
	24-Hour Average	0.14 ppm (365 µg/m^3)	Primary
	3-Hour Average	0.50 ppm (1300 µg/m^3)	Secondary

*Parenthetical value is an approximate equivalent concentration.
Source: Clark County Air Quality Regulations Section 11.2, July 1, 2004

The air quality index for Indian Springs is 12; the national average is 45. According to *Air Quality Index: A Guide to Your Health* (EPA 2003), a value less than 50 is considered good.

The climate in Indian Springs is characterized by limited precipitation, large diurnal changes in temperature, and winds that are dependent on the season. Average temperatures range from 56 to 95 degrees Fahrenheit in the summer; and 29 to 44 degrees Fahrenheit in the winter. Average annual precipitation is 9.2 inches; the national average is 39 inches.

3.6.2 Environmental Consequences

3.6.2.1 General Project Area

3.6.2.1.1 Proposed Action

Construction Impacts

The air quality impact analysis involves estimating project emissions from construction and operation of the project, determining the concentrations of air pollutants from those emissions, and comparing those concentrations to the National Ambient Air Quality Standards (see Table 4).

Construction activities result in emissions of both particulate matter from soil disturbance and combustion pollutants (NO_x and CO) from off-road engine operation. O_3 is not directly emitted by combustion engines, but at ground-level O_3 is created by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. The U.S. EPA has set off-road engine emission limits (40 CFR Part 85). All off-road equipment used for project construction would be required to comply with these standards.

The DAQEM, according to Clark County Air Quality Regulation Section 94, regulates fugitive dust from construction activities. The rule requires actions to prevent or reduce fugitive dust emissions. A Dust Control Permit would be required before any excavation or other soil disturbing activities can occur in the County, and dust reduction measures must be used for any project that would affect more than ten acres.

Construction emissions were estimated with the 2007 Windows version of the urban emissions model (URBEMIS 2007 for Windows, version 9.2.2 available at http://www. urbemis.com). The model was used to estimate land use development emissions from construction data. Emission estimates for construction equipment, worker traffic, and fugitive dust are included in the estimates. Dust reduction measures such as water spraying and chemical palliatives were assumed to be present in estimating the emissions.

Sources of air emissions would be up to two excavator/backhoes, two dozers, a tall crane, a short crane, a watering truck, and a portable generator. All equipment was assumed to operate for ten hours per day for the analysis. It is assumed that an average of 15 workers per day would commute from Las Vegas. Calculated daily air emissions and impacts are shown in Table 5. Calculations are shown in Appendix B. Because the impact values are less than the national air quality standards, impacts would not be significant during construction. Please note that while Reactive Organic Gas (ROG) is a precursor pollutant to O_3, it does not have an ambient standard; therefore, no impact calculation is appropriate.

Table 5. Proposed Action Maximum Construction Emissions and Impacts

Pollutant	Emissions lbs/day	Impact ug/m^3	Standard ug/m^3	Exceeds Threshold?
CO	46	260	9000	No
NO_2	105	59.2	100	No
PM_{10}	3.3	7.3	150	No
$PM_{2.5}$	1.9	4.4	65	No
SO_2	0	0	80	No
ROG	*11.2*	*N/A*	*N/A*	*N/A*

Operational Impacts

Under this alternative, the wastewater would be treated in enclosed structures with odor control equipment on the ventilation system. Sludge will be handled in a facultative lagoon with a water cap. The existing treatment ponds would be converted for use for treated effluent disposal. Hence, this alternative would eliminate existing odor issues at the Indian Springs WWTF and minimize any new odor sources.

Because all of the equipment used at the plant would be electrically powered, no combustion emissions would occur. There would be no air quality impacts. In the case of a power outage, a generator would be used at the pump station to maintain service, and it would generate air emissions. However, this would be temporary and a minimal impact. VOCs would be emitted from treatment processes. Air emissions estimates for the most prevalent hazardous air pollutants from these processes are shown in Table 6. Assuming an inhalation pathway for exposure to these pollutants at the plant fence line, the health risk from these emissions is also shown. Toxic air pollutant impacts have been estimated based upon literature emission factors for WWTPs (Tata, Witherspoon, and Lue-Hing, 2003). The US EPA considers a total risk of less than 1.0E-6 insignificant. The total health risk resulting from operations would be 1.4E-7. Therefore, the project is not expected to cause a significant risk to human health during operation.

Table 6: Toxic Air Pollutant Emissions and Risk

Pollutant	Emission Rate (lbs/year)	Health Risk
Benzene	1.03	4.1E-8
Chloroform	0.44	3.3E-08
Methylene Chloride	0.06	8.3E-9
Perchloroethylene	6.9	5.8E-8
Total Risk	**N/A**	**1.4E-7**

The project would increase the total area of percolation ponds from 14.8 to 21 acres. This change could alter existing evaporation rates and local humidity. No additional sources of dust would be created. Due to the limited nature of the site relative to its surroundings, the project would not significantly affect local climate. Because there would be less standing water, and the water would be treated inside structures with odor controls before discharge, the Proposed Action is not anticipated to produce significant perceptible odors.

3.6.2.1.2 Alternative 1: Total Containment

Construction Impacts

Impacts of this alternative would be greater than those of the Proposed Action because more pond area would be needed for evaporative disposal. In addition, there may be greater construction duration and emissions associated with preparing and lining lagoons for total containment. Assuming additional construction work would involve more equipment, we estimate that emissions for this alternative would be up to 66 percent higher depending on the criteria pollutant than for the Proposed Action, as summarized on the following table.

Table 7. Alternative 1: Maximum Construction Emissions and Impacts

Pollutant	Emissions lbs/day	Impact ug/m^3	Standard ug/m^3	Exceeds Threshold?
CO	70	390	9000	No
NO_2	160	90	100	No
PM_{10}	5	11	150	No
$PM_{2.5}$	3	6.6	65	No
SO_2	0	0	80	No
ROG	*17*	*N/A*	*N/A*	*N/A*

Operational Impacts

Impacts of this alternative would be similar to those of the Proposed Action, except that the open treatment ponds would continue to produce odors. Because there would be greater pond area for evaporative disposal and the ponds have water present for a longer period, the odors may be more noticeable compared to the No Action Alternative.

This alternative would involve the development of a 100 percent evaporative system. This change would increase evaporation rates in the area which could impact local humidity. However, due to the limited size of site relative to the surrounding desert, impacts would not be significant.

3.6.2.1.3 No Action Alternative

Odors exist at the current pond facilities. Incremental growth in the community, including some residents switching from septic to sewer, would increase the potential for odors. There could be significant impacts from odor as a result of the no action alternative.

There would be no change and no significant impacts to climate under this alternative.

3.7 HAZARDOUS MATERIALS AND WASTE

3.7.1 Affected Environment

3.7.1.1 Creech AFB

The CAFB WWTP was surveyed for asbestos and lead based paint in 2008 (Earth Resource Group 2008). The survey found no asbestos containing building materials or regulated lead based paint that would require pre-demolition abatement. Construction wastes would be generated, including demolition waste from removal of the CAFB WWTP.

3.7.1.2 Indian Springs

Hazardous Materials: Based on a NEPA check prepared by Environmental Data Resources, Inc. (EDR) there are no EPA superfund sites in the vicinity of the Proposed Action. The NDEP database lists two active petroleum release sites in Indian Springs related to NAFB; however, the NDEP GIS database map indicates that these sites are not in the vicinity of the project. There are currently no hazardous materials onsite. Some hazardous substances, including fuels, coatings, glues, and welding gasses would be used during project construction.

The project at the Indian Springs WWTF is not anticipated to disturb hazardous materials because nearly all the construction would involve new facilities and existing pipelines. Generation of excavated pond sludge is not anticipated as part of the conversion of ponds to percolation use. Chemicals for disinfection will not used as part of the treatment process.

The collection system improvements would take place in existing rights of way, including commercial areas. There is a chance that, if releases have occurred in Town that have impacted soil or groundwater, special handling of these materials would be necessary during construction activities. In addition, some existing forcemains may be constructed using asbestos-cement pipe. Contractors would be required to follow safe working practices developed by Occupational Safety and Health Association (OSHA) and EPA when cutting, removing, and disposing of any asbestos cement pipe.

3.7.2 Environmental Consequences

3.7.2.1 Creech AFB

3.7.2.1.1 Proposed Action

Demolition of the existing CAFB WWTP would generate demolition debris; however, none is known to be hazardous. Non-hazardous demolition debris is categorized as Municipal Solid Waste and consequently any demolition debris that is not recycled would be disposed of in a Class I municipal landfill. The debris would be hauled to the Pahrump Valley Landfill (Nye County) or alternatively to the Apex Regional Landfill (Clark County). These landfills have adequate capacity to receive the wastes.

Minor amounts of oils and fuels would be brought on Base to support construction equipment. These materials would be properly stored and the contractor would be required to have a spill prevention program, including spill cleanup materials. Therefore the impacts associated with hazardous materials and waste would not be significant.

Following decommissioning of the CAFB WWTP, less plant maintenance related hazardous substances (oils, paints, etc.) would be needed on the Base.

3.7.2.1.2 Total Containment Alternative

The impacts would be the same as the Proposed Action.

3.7.2.1.3 No Action Alternative

Under this alternative, there would be no generation of hazardous materials or wastes.

3.7.2.2 Indian Springs

3.7.2.2.1 Proposed Action

During construction activities, hazardous materials expected to occur on site would be minor quantities of oil, lubricants, and fuels typically used to operate and maintain heavy construction equipment. The contractor would be required to have a spill response plan in place before brining hazardous substances on site. Hazardous substances would be properly stored and contained.

During operations, the proposed facility would contain small quantities of lubricating oil used in the maintenance of treatment equipment, and small quantities of paint used in the upkeep of painted surfaces.

The proposed solar power installation will be passive once installed, and will not require use or storage of hazardous materials.

3.7.2.2.2 Alternative 1: Total Containment

Impacts would be similar to those described above for the Proposed Action. However, there would be fewer hazardous substances at the WWTF because there would be fewer mechanical systems and structures requiring maintenance.

3.7.2.2.3 No Action Alternative

There would be no significant impacts associated with hazardous materials under this alternative.

3.8 SAFETY

3.8.1 Affected Environment

Safety for this EA addresses public safety and USAF ground and munitions safety. Public Safety includes safety during construction and safety associated with operating the Indian Springs WWTF.

3.8.1.1 Creech AFB

USAF ground safety considers issues associated with operations and maintenance activities. Munitions safety assesses the management and use of ordnance or munitions associated with air base operations. Operations and maintenance activities are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements. In addition, Unified Facilities Criteria (UFC) 3-260-01, Airfield and Heliport Planning and Design Criteria, limits locations and heights of objects and facilities around and in the immediate vicinity of an airfield to minimize hazards to airfield and flight operations. Any condition not meeting these requirements is classified as an approved waiver, a permissible deviation, an exemption, or a violation (UFC 3-260-01). Quantity-distance criteria specified in Department of Defense (DoD) 6055.9-Std, DoD Ammunition and Explosives Safety Standards and USAF Manual 91-201, Explosive Safety Standards. The standards include implementation of safe distances between non-explosive related facilities and personnel from weapons-loaded aircraft. Antiterrorism/Force protection measures are required in facility siting and construction to reduce the vulnerability of personnel and property. Munitions are handled and stored in accordance with USAF Manual 91-201, Explosive Safety Standards, and all munitions maintenance is carried out by trained, qualified personnel using USAF approved technical data.

3.8.1.1.1 Ground Safety

Day-to-day operations and maintenance activities conducted at CAFB are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by AFOSH requirements. The fire department of CAFB is fully capable of responding to existing fires and accidents. The USAF and the Clark County are party to mutual support fire suppression agreements. Munitions Safety Ordnance are handled and stored in accordance with USAF explosive safety directives USAF Manual 91-201, and all munitions maintenance is carried out by trained, qualified personnel using USAF approved technical data.

Safety clearance zones protect areas where munitions are stored, maintained, and handled. These zones are geographically defined as Quantity-Distance arcs, and are based on the types and amounts of explosive material involved. On CAFB, no encroachment into these safety areas would occur (USAF 2003).

3.8.1.1.2 Aircraft Safety

Federal Aviation Administration (FAA) and USAF regulations govern aircraft safety. The principal safety concern for aircraft safety associated with the project are creation of features that could attract wildlife, especially birds, which could result in bird strike collisions with aircraft. In addition, construction equipment with high clearance (such as large excavators) pose a potential risk to aircraft if in or near potential flight paths.

3.8.1.2 Indian Springs

Public safety is governed by local, state, and federal regulations and good construction practices. Typical requirements include construction traffic control following the Manual on Uniform Traffic Control Devices (MUTCD), OSHA worker safety requirements, including requirements to barricade and cover open trenches and pits, and OSHA Process Safety Management requirements associated with the treatment process. No chemical disinfection would be used in the treatment process.

3.8.2 Environmental Consequences

3.8.2.1 Creech AFB

3.8.2.1.1 Proposed Action

Construction activities present potential security, ground, and aircraft safety concerns at CAFB. Construction workers would require access to the Base and would have to meet USAF security clearance requirements. Additional truck traffic during construction poses minor additional risk to pedestrian and vehicle traffic on the Base. Construction workers would be required to coordinate work with the CAFB safety officer and follow USAF Munitions, Ground Safety, and Aircraft Safety requirements. Construction equipment would be required to follow FAA rules for flagging and lighting when working within potential flight path areas. By following these measures, impacts to safety would be minimal.

Decreasing the standing pond water volume by increasing area available for percolation should reduce waterfowl attraction at the Indian Springs treatment works, and therefore reduce risks associated with aircraft bird strikes.

The proposed solar power installation will be similar to the system installed at NAFB, and will be designed in consultation with CAFB so that no part of the installation would employ or influence airspace operations or air traffic management at or around CAFB. The solar panels would have a non-glare surface and would not affect aviation activities. Construction, operation, and maintenance of the solar panel system would not attract wildlife to the areas and thus, would not increase the bird/wildlife aircraft strike hazard at CAFB. There would be no impact to flight safety under the Proposed Action.

3.8.2.1.2 Alternative 1: Total Containment

The construction impacts to safety under this alternative are the same as for the Proposed Action. However, the offsite construction of additional ponds would increase the attraction of waterfowl, which would have a significant effect on aircraft safety resulting from increased bird strikes.

3.8.2.1.3 No Action Alternative

Under the No Action Alternative, there would be no construction related safety impacts; however, continued use of the treatment lagoons would not reduce current levels of aircraft bird strike risk.

3.8.2.2 Indian Springs

3.8.2.2.1 Proposed Action

A minor increase in worker and public safety risk would occur during construction activities. These risks would be mitigated by selecting a contractor with a good safety record, and requiring the contractor to follow all applicable OSHA safety requirements, and MUCTD traffic control requirements when working in roadways.

During plant operations, there may be additional risks to treatment works employees associated with electrical power, pumps, other equipment, and confined spaces. The treatment works would be designed to meet all current safety and building codes, and OSHA requires that workers are trained to recognize and control hazards.

By following these requirements, impacts to public and employee safety should be minimal, and therefore, would not be significant.

3.8.2.2.2 Alternative 1: Total Containment

Construction safety impacts should be similar to those for the Proposed Action; however the duration would be longer. There would likely be less safety concerns for employees at the new Indian Springs treatment works under this alternative because fewer mechanical and structural components would be present.

3.8.2.2.3 No Action Alternative

There would be no significant impacts to public safety or worker safety under the No Action Alternative except for long-term potential impacts to public health associated with elevated nitrates in groundwater.

3.9 NOISE

3.9.1 Affected Environment

3.9.1.1 General Project Area

The primary existing noise sources in the general vicinity of the Proposed Action are unmanned military aircraft at the neighboring CAFB. The types of remote aircraft typically deployed at CAFB are much quieter than typical military or commercial jet aircraft. Secondary sources of noise include motor vehicle traffic on Highway 95, motor vehicle traffic along surface streets in Indian Springs, and wind-related sources. Highway vehicle traffic registers at approximately 75 A-Weighted Decibe) (dBA) at 50 feet. Therefore, there are considerable sources of ambient noise within the vicinity of the project site. Please refer to Appendix C for supporting documentation regarding noise levels.

3.9.2 Environmental Consequences

3.9.2.1 General Project Area

3.9.2.1.1 Proposed Action

Both the CAFB and Indian Springs project components are located approximately one mile from all residential or sensitive land uses (e.g., residences, schools, hospitals, and convalescent homes). Some construction work would take place in the commercial area of Indian Springs adjacent to US Highway 95. The Proposed Action would result in short-term construction noise. There would be no permanent increase in noise level due to operations. Calculations for construction noise for the two phases of the project are shown in Appendix C with a table of typical noise levels from construction equipment.

Construction Impacts

Construction would occur over about a 16 month period. The greatest amount of noise would be generated during the demolition of the CAFB WWTP and excavation and grading phases, which would occur for two to three months. For these construction periods, two backhoes, two front loaders, one scraper/grader and one roller/compactor would be used. Based on the estimated sound levels from Appendix C, the result would be an average eight hour noise level of 98.7 dBA at a distance of 50 feet from the noise source during the construction. All construction equipment is required to have EPA approved muffler systems. The closest residential neighborhoods would be located approximately one mile from the project site. Residents would perceive an average day-night noise level of under 55 dBA. These noise levels would not exceed levels of noise considered to be protective of human health (EPA 1974). Since construction and associated noise levels would be restricted to daytime hours (7:00 AM to 10:00 PM), intermittent, and temporary, no significant adverse impacts resulting from noise are expected.

Operational Impacts

Operations at the proposed facility would include a variety of pumping processes and basin aeration. These processes would be driven by electric motors and would operate continuously. Some pumps and air blowers may be enclosed in a building that would serve as an acoustic barrier. Maximum noise levels from the new facility are not expected to exceed 65 dBA when measured at the plant fence line. Residents would perceive a noise level of less than 55 dBA during operations. Therefore, no significant noise impacts would occur from operations.

3.9.2.1.2 Alternative 1: Total Containment

Construction impacts would be for a longer duration than under the Proposed Action due to the additional work required to line the ponds. Operational impacts would not occur because there would be no noise sources constructed under this alternative.

3.9.2.1.3 No Action Alternative

No noise would be generated under this alternative. There would be no significant impacts.

4.0 CUMMULATIVE EFFECTS AND IRREVERSIBLE AND IRRECTRIEVABLE COMMITMENT OF RESOURCES

4.1 CUMULATIVE EFFECTS

Cumulative effects include those that are additive resulting in a significant impact to resources or enable secondary impacts, such as population growth.

4.1.1 Scope of Cumulative Effects Analysis

The scope of the Cumulative effects analysis includes all affected resources, and includes the Proposed Action, Alternative 1 (Total Containment), and the no-action alternative.

4.1.2 Cumulative Effects of Reasonably Foreseeable Actions

Residential development in the area would contribute to environmental impacts in the area, with or without the proposed plant improvements. These projects would not be constructed at the same time; therefore, no cumulative noise or air emission impacts, or any other environmental impacts, would occur.

The approved development projects would allow for an increase of the population in the area. Growth would result in an increase in demands for energy, use of potable water, and the volume of wastewater generated. This wastewater volume increase has been anticipated in the design of this plant and would be accommodated by the proposed improvements. There may be additional traffic impacts as a result of regional growth.

CAFB continues to expand and evolve its mission, which entails construction of new facilities on the Base. These projects could generate additional cumulative impacts to air quality, and potentially traffic and energy demands in the area. However, with the possible exception of short term construction air quality impacts, because the Proposed Action impacts are minor and not significant, the contribution to these cumulative environmental impacts from the proposed action is minimal and not significant.

4.2 IRREVERSABLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Energy would be used to pump the wastewater through the treatment plant and to operate controls. The amount of energy that would be used during operations would be approximately 500 HP (375 kW).

Construction could have minor impacts on important vegetation types. However, the densities of these species were so low on the project site, impacts would not be significant. There is a minimal possibility of encountering desert tortoises and other sensitive wildlife during construction and/or operations. Best management practices and recommendations from the NDOW and the USFWS on how to avoid sensitive species such as the desert tortoise and migratory birds would be followed by the contractor to minimize risk to wildlife.

REFERENCES CITED

Bechtel Nevada 2001. 2000 Data Report Groundwater Monitoring Program, Area 5 Radioactive Waste Management Site, Bechtel Nevada for U.S. Department of Energy, February 2001.

Bird Nature website, map of North American Migratory Flyways (http://www.birdnature.com/allflyways.html).

Clark County Department of Comprehensive Planning (CCDCP) website (http://www.co.clark.nv.us/comprehensive_planning)

Cooperative Institute for Atmospheric Sciences and Terrestrial Applications, Clark County Ozone Study (http://www.ciasta.dri.edu/ciasta_web/Ozone_Workshop/ClarkNonAttnmtBndry.pdf).

Dames & Moore 1996. Biological Resources Technical Memorandum, Environmental Assessment, Regional Training Area Indian Springs Air Force Auxiliary Field, Nellis Air Force Base, Nevada, DAMES & MOORE, Inc. D&M Job No.: 13474-085-001, May 1996.

DAQEM 2009. Personal communication from Mr. Steve Deyo of the Clark County Department of Air Quality and Environmental Management to Ms. Sheryl Parker of the United States Air Force, 25 August 2009.

Earth Resource Group 2008. Limited Asbestos, Lead Based Paint and Hazardous Waste Survey-Waste Water Treatment Plant, Creech Air Force Base – Indian Springs Nevada Earth Resource Group, 10 March 2008.

Environmental Data Resources, Inc. (EDR) 2005. NEPACheck, EDR, Milford, CT, September.

EPA 2003. Air Quality Index: A Guide to Your Health, EPA-454/K-03-002 , United States Environmental Protection Agency, Office of Air and Radiation, August 2003.

Kennedy/Jenks Consultants 2005. Preliminary Design Report, Indian Springs Wastewater System Improvements, for Clark County Water Reclamation District, Las Vegas, NV, October 2005.

Knight and Leavitt 2009. A Class III Cultural Resource Inventory of Proposed Sewage Disposal Pond and Associated Facilities on Clark County Water Reclamation District Property and Public Rights of Way, Indian Springs, Clark County, Nevada, Knight & Leavitt Associates, Inc., July 2009.

Leonard, R. Leon, 1997. Air Quality Permitting, Lewis Publishers, 1997, ISBN 0-87371-790-2.

National Park Service website, Desert Tortoise (http://www.nps.gov/moja/planning/tort.htm).

Nevada Department of Corrections website, Southern Desert Correctional Center (http://www.doc.nv.gov/sdcc/).

NDOT 2007. Map of Indian Reservations and Colonies in Nevada, Nevada Department of Transportation, 2007. http://www.nevadadot.com/traveler/maps/StateMaps/pdfs/ReservationColonies.pdf.

Nevada Federal Lands and Indian Reservations (Map), National Atlas, U.S. Department of the Interior (nationalatlas.gov)

PBS&J 2008. Clark County Water Reclamation District Indian Springs Treatment Facility Upgrade Biological Resources Report, PBS&J, 11 January 2008.

SHPO 2009. Letter from Rebecca Palmer of State of Nevada Department of Cultural Affairs, State Historic Preservation Office, to Stephanie Wilson, US Environmental Protection Agency, RE: Indian Springs Collection and Treatment System Project, Clark County, 18 August 2009.

Stanley Consultants, Inc. 2004. Facilities Master Plan, Functional Area 5 Outlying Areas, for Clark County Water Reclamation District, Las Vegas, NV. February 2004.

Tata, Witherspoon, and Lue-Hing, 2003. VOC Emissions from Wastewater Treatment Plants, Characterization, Control, and Compliance, Lewis Publishers, 2003, ISBN 1-56676-820-9.

USAF 2003. Air Installation Compatible Use Zone (AICUZ) Study, Nellis AFB, NV. HQ ACC, Langley AFB, VA, 2003.

USAF 2006. *Final Environmental Assessment For Leasing Nellis Air Force Base Land For Construction & Operation of a Solar Photovoltaic System*, Clark County, Nevada, United States Air Force, August 2006.

USAF 2007. *Plan 12*6-4, Draft Integrated Natural Resources Management Plan, Nellis Air Force Base/Nevada Test And Training Range, United States Air Force, Nellis Air Force Base, Nevada 99th Civil Engineering Squadron, Environmental Management Flight, May 2007.

USAF 2008 Final Nellis and Creech Air Force Bases Capital Improvements Program Environmental Assessment United States Air Force Air Combat Command (ACC), September 2008.

URBEMIS 2007 for Windows, Version 9.2.2. Available at http://www. urbemis.com

U.S. Bureau of the Census. Census 2000, Clark County Census Data , U.S. Bureau of the Census (http://quickfacts.census.gov/qfd/states/32/32003.html).

U.S. EPA 1971. Environmental Protection Agency, NTID 300-1, 1971.

U.S. EPA 1974. Environmental Protection Agency, “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety,” 550/9-74-004, 1974.

U.S. Fish and Wildlife Service website, Desert National Wildlife Refuge (http://www.fws.gov/desertcomplex/desertrange/index.htm).

USFWS 2008. Nevada's Protected Species by County U.S. Fish and Wildlife Service Nevada Fish and Wildlife Office, updated 2 may 2008, http://www.fws.gov/Nevada/protected_species/species_by_county.html.

U.S. Geological Survey 2002. "Trend Analysis of Groundwater Levels and Spring Discharge in the Yucca Mountain Region, Nevada and California, 1960-2000", Water Resources Investigation Report 02-4178, Fenelon and Moreo, 2002.

US EPA website, Clean Air Act Reclassification (http://www.epa.gov/fedrgstr/EPA-AIR/1996/August/Day-12/pr-23589.html).

5.0 PERSONS AND AGENCIES CONTACTED

Clark County Water Reclamation District
5857 E. Flamingo Road
Las Vegas, NV 89122
CCWRD No. 561

Nevada Department of Wildlife
Southern Region
Brad Hardenbrook, Habitat Bureau
4747 W. Vegas Dr.
Las Vegas, NV 89108

USAF Nellis Air Force Base
Lynn Haarklau,Civ USAF ACC 99 CES/CEAO
6020 Beale Ave
Nellis AFB, NV 89191

USAF Langley Air Force Base
Sheryl K. Parker, Environmental Analysis Project Manager
HQ ACC/A7PS
129 Andrews St., Ste 102
Langley AFB, VA 23665-2769

U.S Fish and Wildlife Service
Nevada Fish and Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502

U.S. Fish & Wildlife Service
Southern Nevada Field Office
Attn. Assistant Field Supervisor
4701 N. Torrey Pines Drive
Las Vegas, NV 89130

6.0 LIST OF PREPARERS AND CONTRIBUTORS

The principal responsible author of this document is Kennedy/Jenks Consultants. The following Kennedy/Jenks staff members prepared the document:

Gregg Bryden, Senior Scientist
200 SW Market Street, Suite 500
Portland, Oregon 97201
503-295-4911
GreggBryden@KennedyJenks.com

Ron Walz, Project Manager
240 Country Club Road, Suite A
Eugene, OR 97401
541-338-8135
RonWalz@kennedyJenks.com

Other contributors at Kennedy/Jenks include John David Bamford and Regan Schutte.

Document information and reviews were provided by Clark County Water Reclamation District (CCWRD). The contact at CCWRD is:

Shilpa Ghia
CCWRD Engineering & Construction
5857 E. Flamingo Road
Las Vegas, NV 89122
(702) 668-8229
sghia@cleanwaterteam.com

Significant contributions to the biological and cultural resources section of this document were provided by PBS&J Environmental. The primary contributor at PBS&J was:

Chris Mundhenk, Project Manager
1200 2nd Street
Sacramento, California 95814
310.268.8132
cdmundhenk@pbsj.com

7.0 LIST OF AGENCIES RECEIVING ENVIRONMENTAL ASSESSMENT DOCUMENTS

Bureau of Land Management
Las Vegas Field Office NV056
4701 N. Torrey Pines Drive
Las Vegas, NV 89130

Bureau of Reclamation
Lower Colorado Region
500 Fir Street
Boulder City, NV 89005

Mr. John Mendoza, S. Planner
Clark County Department of Air Quality & Environmental Management
500 S. Grand Central Parkway
PO Box 555210
Las Vegas, NV 89155

The Honorable Rory Reid, Chairperson
Clark County Board of Commissioners
500 S. Grand Central Parkway
Las Vegas, NV 89155

Mr. Mario Bermudez, Planning Manager
Clark County Department of Comprehensive Planning
500 S. Grand Central Parkway, First Floor
Las Vegas, NV 89155

Sandro Amaglio, Regional Environmental Officer
Federal Emergency Management Agency
Region 9
111 Broadway, Suite 1200
Oakland, CA 94607

Indian Springs Library
715 Gretta Lane
Indian Springs, NV 89018

Chris Munhall
Liaison Services
Clark County Government Building
500 S. Grand Central Parkway, 6th floor
Las Vegas, NV 89155-1712

Las Vegas Library
Reference Department
833 Las Vegas Blvd North
Las Vegas, NV 89101

Nevada State Clearinghouse
209 E. Musser St. Room 200
Carson City, NV 89701

Southern Nevada Regional Planning Coalition
240 Water Street Mail, Stop 115
Henderson, NV 89009

U.S. Army Corps of Engineers
Regulatory Division
1325 J. Street, Room 1480
Sacramento, CA 95814-2922

Kristin Gullatt
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street (WTR-10)
San Francisco, California 94105

Mr. Robert Williams, State Supervisor
U.S. Fish and Wildlife Service
Nevada Ecological Field Office
1340 Financial Blvd, Suite 234
Reno, NV 89502

U.S. Geological Survey
2730 N. Deer Run Road
Carson City, NV 89701

Western Nevada Agency
Bureau of Indian Affairs
311 East Washington Street
Carson City, NV 89701

Appendix A

Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502
Ph: (775) 861-6300 ~ Fax: (775) 861-6301

September 27, 2006
File No. 1-5-06-SP-553

Mr. J-D Bamford, Project Manager
Kennedy/Jenks Consultants
707 Wilshire Boulevard, Suite 4700
Los Angeles, California 90017

Dear Mr. Bamford:

Subject: Federally Listed Species near the Proposed Wastewater Treatment Plant Upgrade Site in Indian Springs, Clark County, Nevada

This responds to your letter dated August 16, 2006, requesting information regarding federally listed species and their designated critical habitat located in the project area for the proposed wastewater treatment plant upgrade in Indian Springs, Clark County, Nevada. The threatened desert tortoise (*Gopherus agassizii*) (Mojave population) is the only federally listed species that may occur in the project area. The project area does not occur in or near designated critical habitat for this species. This response fulfills the requirement of the Fish and Wildlife Service (Service) to provide a list of species pursuant to section 7(c) of the Endangered Species Act of 1973, as amended, (Act) for projects that are authorized, funded, or carried out by a Federal agency.

The Nevada Fish and Wildlife Office no longer provides species of concern lists. Most of these species for which we have concern, are also on the sensitive species list for Nevada maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's sensitive species list and are partnering with them to provide distribution data and information on the conservation needs for sensitive species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or are in serious decline. Consideration of these sensitive species and exploring management alternatives early in the planning process can provide long-term conservation benefits and avoid future conflicts.

For a list of sensitive species by county, visit Heritage's website at www.heritage.nv.gov. For a specific list of sensitive species that may occur on the property, you can obtain a data request form from the website or by contacting Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, 775-684-2900. Please indicate on the form that your request is being

TAKE PRIDE IN AMERICA

obtained as part of your coordination with the Service under the Act. During project analyses, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Our agency also holds conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 et. seq.). Projects should be evaluated for potential impacts to migratory birds in the area. Under the MBTA, nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Such destruction may be in violation of the MBTA. Therefore, we recommend land clearing, or other surface disturbance associated with proposed projects, be conducted outside the avian breeding season to avoid potential destruction of bird nests or young, or birds that breed in the area. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Please reference File No. 1-5-06-SP-553 in future correspondence concerning this species list. If you have any questions regarding this correspondence or require additional information, please contact Christiana Manville in our Southern Nevada Field Office at (702) 515-5230.

Sincerely,

Cynthia T. Martinez

for Robert D. Williams
Field Supervisor

KENNY C. GUINN
Governor

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

TERRY R. CRAWFORTH
Director

GENE WELLER
Deputy Director

SOUTHERN REGION
4747 WEST VEGAS DRIVE
LAS VEGAS, NEVADA 89108
(702) 486-5127; 486-5133 FAX

October 6, 2006

NDOW SR# 07-038

J-D Bamford
Project Manager
Kennedy/Jenks Consultants
707 Wilshire Blvd Ste. 3280
Los Angeles, CA 90017

RE: Draft Environmental Information Document (EID) for Water Treatment Facility Upgrades in Indian Springs; NV K/J 0594201

Dear Mr. Bamford:

Thank you for notification of the above mentioned EID. With regard to concerns for most wildlife relative to this project, immediate, site-specific impacts resulting from construction and operation disturbances (i.e. facility footprint) are expected to be minor. We do ask for your consideration of the following species and types of wildlife.

Desert Tortoise. Listed as a threatened species under the Endangered Species Act of 1973 (ESA), as amended, and classified by the State of Nevada as threatened. Because the project is located below 5,000 feet elevation within Clark County on non-federal lands (Clark County Reclamation District), we will presume all appropriate measures for mitigation called for under the County's ESA incidental take permit {Section 10(a)1(B)} have been satisfied. Applicability of mitigation in the form of development fees ($550/acre) as called for in the Clark County Multiple Species Habitat Conservation Plan is advisable. A review may also be useful in determining the necessity to exercise all mitigation measures identified in the EID. For example, should the proposed project be covered under the County's incidental take permit form the U.S. Fish & Wildlife Service, removal of tortoises from the site is voluntary. Alternatively, if the proposed project is federally funded in whole or a significant portion, we understand that the project may be subject to ESA Section 7 consultation. The Clark County Reclamation District should be able to provide insight to the situation. The County's Multiple Species Habitat Conservation Program can be found online at http://www.accessclarkcounty.com/air_quality/Environmental/HabitatConservation.htm.

Burrowing Owl. A small, ground-nesting owl utilizing burrows located in well-drained soils often associated with natural banks of desert washes, earthen stock tanks, raised seldom-used roadbeds, flood diversion dikes. Although migratory, there tends to be a high degree of site fidelity, meaning breeding pairs will use the same burrow year after year. A survey is recommended of the immediate project area to identify potential nest sites and the presence of live individuals. If empty burrows are found, they should be collapsed to discourage their use within the project area. However, if an owl is observed to occupy a burrow, monitoring by a qualified biologist for signs of breeding behavior should occur. A breeding pair with young must be left alone and not disturbed until the owlets fledge. Generally, the breeding season is from mid-March through May, with fledged young present until August. In addition to state protection,

the burrowing owl is also protected under the federal Migratory Bird Treaty Act. Contact with U.S. Fish & Wildlife Service, Las Vegas Field Office may be helpful (702/515-5230).

Other Migratory Birds. Migratory birds are also protected under the federal Migratory Bird Treaty Act. In addition to the waterfowl and other water birds using the existing ponds, passerines (perching birds) and potentially frequenting the vicinity include the black-throated sparrow and loggerhead shrike. These are associated with dryer habitat like creosote-bursage scrub and saltbush communities on or adjacent to the project area. We would suggest whenever practicable to avoid construction activities that would disturb birds having established nests. The nesting period is generally from late-February to August (see attached USFWS protocols). Because it is unclear from the EID whether vegetation previously removed (per request by the Nevada Division of Environmental Protection) also included desert scrub, it may be worthwhile to verify the extent of vegetation clearance and bearing on potential for shrub-nesting birds.

Gila Monster. This large, rarely observed lizard may utilize similar habitat as the burrowing owl but is much more cryptic in nature. It is classified as protected by the State of Nevada and listed as a BLM sensitive species for management considerations on public lands. Please see our attached protocols for measures taken should a gila monster be encountered in the project area.

Should you have any questions, please call Biologist Roddy Shepard at (702) 486-5127 x3613, or by e-mail at **rshepard@ndow.org**.

Sincerely,

D. Bradford Hardenbrook
Supervisory Habitat Biologist, Southern Region

RS/DBH: dbh

attachments

Cc: Files NDOW

NEVADA DEPARTMENT OF WILDLIFE
Southern Region
4747 W. Vegas Drive, Las Vegas, Nevada 89108
702 / 486-5127; 702 / 486-5133 FAX

17 November 2005

GILA MONSTER PROTOCOL FOR MINIMIZING IMPACTS IN THE CONSTRUCTION SITE

Background

- Per Nevada Administrative Code 503.080, the Gila monster is classified as a Protected reptile.
- Per Nevada Administrative Codes 503.090, and 503.093, no person shall capture, kill, or possess any part thereof of Protected wildlife without the prior written permission by the Nevada Department of Wildlife (NDOW).

This species is rarely observed relative to other species and is the primary reason for its Protected classification by the State of Nevada. The USDI Bureau of Land Management has recognized this lizard as a sensitive species since 1978. Most recently, the Gila monster was designated as an *Evaluation* species under Clark County's Multiple Species Habitat Conservation Plan (MSHCP). The evaluation designation was warranted because inadequate information exists to determine if mitigation facilitated by the MSHCP would demonstrably cover conservation actions necessary to insure the species' persistence without protective intervention as provided under the federal Endangered Species Act.

The Gila monster is the only venomous lizard endemic to the United States. Its behavioral disposition is somewhat docile and avoids confrontation. But it will readily defend itself if threatened. Most bites are considered illegitimate and consequential to harassment or careless handling.

The banded Gila monster (*Heloderma suspectum cinctum*) occurs in Clark, Lincoln, and Nye counties of Nevada. Found mainly below 5,000 feet elevation, its geographic range approximates that of the desert tortoise and is coincident to the Colorado River drainage. The Gila monster is recognizable by its striking black and orange-pink coloration. In keeping with its namesake, the banded Gila monster retains a black chain-link, banded appearance into adulthood. Other lizard species are often mistaken for the Gila monster. Of these, the western banded gecko (*Coleonyx variegatus*) and chuckwalla (*Sauromalus obesus (= ater)*) are most frequently confused with the Gila monster. All three species share the same habitats.

The banded gecko is often mistakenly identified as a baby or juvenile Gila monster. Banded geckos do have a finely granular skin and pattern that can be suggestive of the Gila monster to the untrained eye. However, banded gecko heads are somewhat pointed at the snout and the relatively large eyes have vertical pupils. Snouts of Gila monsters are bluntly rounded and the

smallish eyes have round pupils. Newly hatched Gila monsters are about 5-6 inches long with a vivid orange and black, banded pattern. Geckos are at best cream to yellow and brown in pattern and do not exceed 5 inches.

Both juvenile and adult chuckwallas are commonly confused with the Gila monster. Juvenile chuckwallas have an orange and black, banded tail. Although banding of the tail fades as chuckwallas mature, their large adult size (up to 17 inches) rivals that of the Gila monster. Adult chuckwallas have a body shape somewhat suggestive of the Gila monster, but they lack the coarsely beaded skin and black and orange body pattern of the Gila monster.

Gila monster habitat requirements center on desert wash, spring and riparian habitats that inter-digitate primarily with complex rocky landscapes of upland desert scrub. They will use and are occasionally encountered out in gentler terrain of alluvial fans (bajadas). Hence, Gila monster habitat bridges and overlaps that of both the desert tortoise and chuckwalla. Gila monsters are secretive and difficult to locate, spending >95% of their lives underground.

Gila monsters make use of deep crevices and caves of primarily rocky slopes for winter and summer refuge. When active they will also frequent animal burrows and other shallow refugia on more gentle slopes. Foraging Gila monsters seek nestlings of ground or low-shrub nesting birds (e.g. doves, quail), rodents (e.g. mice, kangaroo rats), lagomorphs (e.g. cottontail) and other reptiles which are found in highest concentration in greater productivity areas, such as along well-vegetated wash courses of bajadas.

Scant information exists on detailed distribution and relative abundance in Nevada. The Nevada Department of Wildlife (NDOW) has ongoing management investigations addressing the Gila monster's status and distribution, hence additional distribution, habitat, and biological information is of utmost interest. In assistance to gathering additional information about Gila monsters in Nevada, NDOW will be notified whenever a Gila monster is encountered or observed, and under what circumstances.

Construction Site Protocols

Helpful to any instructional program, workers and other personnel should at least know how to: 1) identify Gila monsters and be able to distinguish it from other lizards such as chuckwallas and banded geckos; 2) report any observations of Gila monsters to the Nevada Department of Wildlife (NDOW); 3) be alerted to the consequences of a bite resulting from carelessness or unnecessary harassment; and 4) be aware of protective measures provided under state law.

1) Live Gila monsters found in harms way on the construction site will be captured and then detained in a cool, shaded environment (≤85°F) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation purposes. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gate allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points). A clean 5-gallon plastic bucket w/ a secure, vented lid; an 18"x 18"x 4" plastic sweater box w/ a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location (e.g. GPS record), date, time, and circumstances (e.g. biological

survey or construction) and habitat description (vegetation, slope, aspect, substrate) will also be provided to NDOW.

2) Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified during normal business hours. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, habitat, and mapped location.

3) Should NDOW's assistance be delayed, biological or equivalent acting personnel on site may be requested to remove and release the Gila monster out of harms way. Should NDOW not be immediately available to respond for photo-documentation, a 35mm camera or equivalent (5 mega-pixel digital minimum preferred) will be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures, preferably on slide film (.tif or .jpg digital format) will be provided to NDOW. Pictures will include the following information: 1) Encounter location (landscape with Gila monster in clear view); 2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); 3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

Please contact NDOW Biologist Polly Conrad at (702) 486-5127 x3718 or by e-mail at pconrad@ndow.org for additional information regarding these protocols.

U.S. Fish & Wildlife Service

U.S. Fish and Wildlife Service
1340 Financial Blvd. # 234
Reno, Nevada 89502
Phone: 775-861-6300
Fax: 775-861-6301

Avoid Unnecessary Construction Delays, and Help Protect Burrowing Owls in Clark County

Burrowing owls are protected under the Migratory Bird Treaty Act. Killing or possession of birds protected under this Act is prohibited, as well as destruction of nests with eggs or young. Here are some tips to avoid taking or killing burrowing owls and their eggs or young during construction activities on private land in Clark County:

Collapse burrows now, but check for owls first

To avoid taking burrowing owls during their breeding season (mid-March through August), collapse all burrows, holes, crevices, or other cavities on the construction site **BEFORE** the breeding season begins. This will discourage owls from breeding on the construction site. Ensure that owls are outside the burrow before grading, to avoid burying them.

If burrowing owls are found, they may or may not be breeding. Observing their behavior may help determine their breeding status. You can also hire professional biologists through private environmental consulting companies who can assist in determining breeding status. If breeding behavior is observed, you should assume that an active nest is present and the area should be avoided until chicks fledge or it is determined that the nest failed. A fiber optic scope or remote mini camera may be used to look into a burrow to help determine the presence of owls or nests.

If an owl is nesting, the site must be avoided until the chicks fledge to ensure that birds do not abandon the nest. The total nesting cycle takes a minimum of 74 days, during which time construction activity would need to cease on the site. Generally, eggs may be laid between mid-March and the end of May, and young may be present from mid-April through August.

A combination of the behaviors listed below may indicate the presence of an active nest:

- A pair of owls is observed constantly at a site, then only one owl is seen. This is an indication that the pair may have chosen a nest burrow, and the female has gone down below to lay and incubate eggs. Once incubation begins the female rarely leaves the burrow.
- An owl is frequently seen carrying food to the burrow. The male provides food for the female while she is incubating eggs. The best time of day to observe owls is dawn and dusk, but they can be active throughout the day. The male will most likely leave the food in front of the burrow and the female will come to the entrance to take the food. This is probably the best indication that the owls have an active nest.
- Only one owl has been seen for awhile, but all of a sudden two owls are seen again. This would indicate that the eggs have hatched, and the female has emerged from the burrow to assist the male in hunting for food to feed the chicks. The chicks will appear at the burrow entrance when they are about 10 days old.

If you have any questions, contact the Fish and Wildlife Service at 702-515-5230.
Thank you for your assistance.

Appendix B

Pollution Emissions Calculations for Construction

Appendix B: Pollution Emissions Calculations for Construction

Air Quality Impact Analysis Methodology

The air quality impact analysis consists of estimating project emissions from construction and operation, determining the concentrations of air pollutants from those emissions, and comparing those concentrations to the ambient air quality standards shown in Table C-1.

Construction Impacts

Construction emissions were estimated with the 2007 Windows version of the urban emissions model (URBEMIS2007 for Windows, available at http://www.urbemis.com). The model was used to estimate land use development emissions from construction data. Emission estimates for construction equipment, worker traffic, and fugitive dust are included in the estimates. Dust mitigation measures such as water spraying and chemical palliatives were assumed to be present in estimating the emissions.

Table C-1. Indian Springs Emissions and Impacts

Pollutant	Max Emissions(1)	Control Efficiency(2)	Impacts (3)	Standard	Averaging period
	lb/day	percent	ug/m3	ug/m3	
ROG	11.19	90%	N/A(5)	N/A	N/A
NO_x	104.98	40%	59.18	100	annual
CO	46.24	0%	260.66	9000	8-hr
PM_{10}	3.25	85%	7.33	150	24-hr
$PM_{2.5}$	1.93	85%	4.35	65	24-hr

(1) Maximum emissions are obtained from URBEMIS2007 assuming 105 acres disturbed, 16 month construction period with 12 months in 2009 and 4 months in 2010, and exhaust emissions mitigation using exhaust gas recirculation, soil disturbance mitigation assumed at 80% using water application or chemical palliatives.
(2) Control efficiency has already been included in calculation of maximum emissions.
(3)Soil disturbance dispersion calculated using SCREEN3 for an area source 44m x 44m (equivalent to 1 day of operations), 0 meter release height.
(4)Exhaust emission dispersion calculated using SCREEN# for a point source with 3 m stack height, 0.5m diameter, 10 m/s exhaust velocity, and 700oK exhaust temperature
(5)ROG is a precursor pollutant to ozone and does not have an ambient standard, so no impact calculation is appropriate.

Chi =	1.34E+07	ug/m3/g/sec	for area source (soil disturbance)
Chi =	447	ug/m3/g/sec	for exhaust point source

Assume 8-hr impacts are the same as 1-hour impacts.(Leonard, 1997)
Assume 24-hr impacts are 0.4 times 1-hour impacts
Assume annual impacts are 0.1 times 1-hour impacts

Appendix C

Noise Emissions Calculations for Construction

Appendix C: Noise Emissions Calculations for Construction

Introduction

Noise impacts include short term and long term impacts. Short term noise impacts occur from on-site construction activities and off-site heavy-duty truck traffic. Long term noise impacts occur from off-site motor vehicle traffic and on-site project operations (e.g. mechanical equipment use, sludge removal) and maintenance activities (e.g. landscaping and building maintenance).

Noise is characterized by sound pressure level (as measured in decibels), frequency (as measured in hertz), and duration. The sound pressure level is related to the perceived "loudness" of a particular sound while the frequency determines the "pitch". The human ear does not respond well to either very high or very low frequencies, but responds well to moderate frequency sounds (in the vicinity of the pitch of the human voice). To obtain a value that best represents sound as perceived by the ear, it is necessary to adjust ("weight") sounds to deemphasize low and high frequencies relative to moderate frequencies. The A-weighted sound level is the descriptor that is used almost exclusively in noise measurements used to determine impacts on people. The unit that indicates sound levels are A-weighted is often noted as dBA.

The Energy Equivalent Noise Level (LEQ) is the sound energy level averaged over a period of time. It represents the amount of time-varying sound energy received during that time. The United States Environmental Protection Agency (U.S. EPA) has selected LEQ as one of the best environmental noise descriptors due to its reliable evaluation of pervasive long-term noise, simplicity, and good correlation with known effects of noise on individuals.

The Day-Night Noise Level (Ldn) is a measure of cumulative noise exposure in a community over a 24 hour period. Other measurements of noise levels are averaged out over periods of interest, primarily day (7:00 a.m. to 10:00 p.m.) and night (10:00 p.m. to 7:00 a.m.). Human sensitivity to noise increases during the evening and at night, meaning that excessive noise interferes with the ability to sleep. Consequently it is common for a 10-dB reduction be subtracted from commonly accepted daytime noise levels.

Significance Criteria

Land use compatibility with differing noise levels is regulated at the local level, although the Federal government has established suggested land use compatibility criteria for different noise zones (Federal Interagency Committee on Urban Noise, 1980). Residential areas and schools are considered compatible where the Ldn is up to 65 dBA; outdoor recreational activities such as fishing, golfing and horseback riding are compatible when noise exceeds 75 dBA; and parks are compatible with noise levels up to 75 dBA.

Basis for Noise Calculations
Noise Level Estimates for Earth Moving Phase (grading and excavating)

Distance to nearest residence: 4550 (ft)
Number of **daytime** hours: 15
Number of **night** hours: 9

Equipment	Total Project (Qty.)	Max Single Day Use (Qty.)	Lmax at 50' (dBA)	Max Daily Usage (% of 8hr)	Unit Leq (8hr)	Unit 10^(Leq(8hr)/10)	Max Single Day 10^(Leq(8hr)/10)
Crane, Derrick	1	0	89	30%	83.77	238298470.4	0
Crane, Mobile	1	0	88	20%	81.01	126191468.9	0
Backhoes	2	2	96	70%	94.45	2786750194	5573500388
Front Loader	1	2	87	70%	85.45	350831063.5	701662127
Scraper, Grader	1	1	92	70%	90.45	1109425235	1109425235
Compactor, Roller	1	1	75	50%	71.99	15811388.3	15811388
Concrete Mixer	1	0	89	80%	88.03	635462587.8	0
Portable Generators	1	0	82	100%	82.00	158489319.2	0
Watering Truck	1	1	82	10%	72.00	15848931.92	15848932
Other Service Trucks	1	0	82	25%	75.98	39622329.81	0

	7416248070	*raw sum*
TOTALS:	98.70	Leq 8hr (@ 50')
(all in dBA)	59.52	Leq 8hr (@ Distance)
	95.97	Leq daytime (@ 50')
	56.79	**Leq daytime (@ Distance)**
	93.93	Ldn(50')
	54.75	Ldn(Distance)
	(none)	**Leq night time**

Basis for Noise Calculations
Noise Level Estimates for Construction Phase (buildings and equipment)

Distance to nearest residence: 4550 (ft)
Number of **daytime** hours: 15
Number of **night** hours: 9

Equipment	Total Project (Qty.)	Max Single Day Use (Qty.)	Lmax at 50' (dBA)	Max Daily Usage (% of 8hr)	Unit Leq (8hr)	Unit 10^(Leq(8hr)/10)	Max Single Day 10^(Leq(8hr)/10)
Crane, Derrick	1	1	89	30%	83.77	238298470.4	238298470
Crane, Mobile	1	1	88	20%	81.01	126191468.9	126191469
Backhoes	2	0	96	70%	94.45	2786750194	0
Front Loader	1	0	87	70%	85.45	350831063.5	0
Scraper, Grader	1	0	92	70%	90.45	1109425235	0
Compactor, Roller	1	0	75	50%	71.99	15811388.3	0
Concrete Mixer	1	1	89	80%	88.03	635462587.8	635462588
Portable Generators	1	1	82	100%	82.00	158489319.2	158489319
Watering Truck	1	1	82	10%	72.00	15848931.92	15848932
Other Service Trucks	1	1	82	25%	75.98	39622329.81	39622330
						1213913108	*raw sum*

TOTALS:	90.84	Leq 8hr (@ 50')
(all in dBA)	51.66	Leq 8hr (@ Receptor)
	88.11	Leq daytime (@ 50')
	48.93	**Leq daytime (@Receptor)**
	86.07	Ldn(50')
	46.89	Ldn(Receptor)
	(none)	**Leq night time**

Construction Equipment Noise Levels

Equipment		Noise Level Range (dBA)*
Earth Moving	Compactors (Rollers)	72-75
	Front Loaders	72-87
	Backhoes	72-96
	Tractors	77-98
	Scrapers, Graders	81-92
	Pavers	85-88
	Trucks	82-96
Materials Handling	Concrete Mixers	75-89
	Concrete Pumps	81-84
	Cranes (Mobile)	75-88
	Cranes (Derrick)	87-89
Stationary Equipment	Pumps	69-72
	Generators	71-82
	Compressors	76-87
Impact Equipment	Pneumatic Wrenches	83-88
	Jack Hammers/Rock Drills	81-98
	Pile Drivers	96-106
Other Equipment	Vibrators	68-81
	Saws	72-82

*At a distance of 50 feet
Source: EPA, 1971