F I N A L

Environmental Impact Statement

Volume 1

J U L Y 2 0 0 8

C O Y O T E S P R I N G S
I N V E S T M E N T

P L A N N E D D E V E L O P M E N T P R O J E C T

Coyote Springs Investment Planned Development Project

Environmental Impact Statement

July 2008

Prepared for:

LEAD AGENCY
U.S. Fish and Wildlife Service
Reno, NV

COOPERATING AGENCIES
U.S. Army Corps of Engineers
St. George, UT

U.S. Bureau of Land Management
Ely, NV

Prepared by:

ENTRIX, Inc.
2300 Clayton Road, Suite 200
Concord, CA 94520

Huffman-Broadway Group
828 Mission Avenue
San Rafael, CA 94901

Resource Concepts, Inc.
340 North Minnesota Street
Carson City, NV 89703

COYOTE SPRINGS INVESTMENT PLANNED DEVELOPMENT PROJECT

Environmental Impact Statement

ENTRIX, Inc.
2300 Clayton Road, Suite 200
Concord, CA 94520
Phone 925.935.9920 ▪ Fax 925.935.5368

Huffman-Broadway Group
828 Mission Avenue
San Rafael, CA 94901
Phone 415.925.2000 ▪ Fax 415.925.2006

Resource Concepts, Inc.
340 North Minnesota Street
Carson City, NV 89703
Phone 775.883.1600 ▪ Fax 775.883.1656

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ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ac	acres
ACECs	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
Aerojet	Aerojet-General Corporation
AESO	Arizona Ecological Services Office
afa	acre-foot per annum
AFB	Air Force Base
afy	acre-feet per year
AGFD	Arizona Game and Fish Department
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
AMP	Adaptive Management Plan
ANFO	ammonium nitrate and fuel oil
APE	Area of Potential Effect
APN	Assessor Parcel Number
ASTM	American Society for Testing and Materials
ATCAA	Air Traffic Control Assigned Airspace
ATVs	all terrain vehicles
AUM	Animal Unit Months
BA	Biological Assessment
BAQP	Bureau of Air Quality Planning
BARCASS	Basin and Range Carbonate Aquifer System Studies
BAS	Biological Advisory Subcommittee
BBS	Breeding Bird Survey
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
BO	biological opinion
BRRC	Biological Resources Research Center
CA	Conveyance Agreement
CAA	Clean Air Act
CBD	Center for Biological Diversity
CBOD	carbonaceous biochemical oxygen demand
CCRFCD	Clark County Regional Flood Control District
CEC	Commission for Environmental Cooperation
CEQ	Council on Environmental Quality

CFR	Code of Federal Regulations
cfs	cubic feet per second
CHAMP	Chemical Application Management Plan
CHU	Critical Habitat Unit
City	City of Mesquite
CHU	Critical Habitat Unit
cm	centimeter
CO	carbon monoxide
COM	Construction, Operations and Maintenance
Corps	U.S. Army Corps of Engineers
CS	Corrected Sign
CSCC	Coyote Springs Conservation Center
CS-H-1	Coyote Springs Resort Zone
CSI	Coyote Springs Investment LLC, a Nevada limited liability company
CSLC	Coyote Springs Land Company, LLC
CS-M-U	Coyote Springs mixed use zones
CSPUD	Coyote Springs Planned Unit Development
CSPUDC	Coyote Springs Planned Unit Development Code
CSICL	Coyote Springs Investment Conservation Lands (Note: This name is used for reference throughout this document. The name ultimately assigned to this area by BLM may change.)
CWA	Clean Water Act
DA	Development Agreement
dB	decibel
dBA	A-weighting sound level
DCP	Desert Conservation Plan
DFC	Desert Fishes Council
dm	decimeter
DNWR	Desert National Wildlife Range
DOE	Department of Energy
DPS	Distinct Population Segment
DTCC	Desert Tortoise Conservation Center
DTRPAC	Desert Tortoise Recovery Plan Assessment Committee
DTSAC	Desert Tortoise Science Advisory Committee
DTSAT	Desert Tortoise Science Advisory Team
DWMAs	Desert Wildlife Management Areas
EA	Environmental Assessment
EC	Executive Committee
EIS	Environmental Impact Statement

EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
ET	evapotranspiration
FAA	Federal Aviation Administration
FLMPA	Federal Land Policy and Management Act
FMV	fair market value
FPEMS GID	Fire Protection and Emergency Medical Service General Improvement District
fps	feet per second
FR	Federal Register
Framework Plan Amendment	Caliente Management Framework Plan Amendment and Record of Decision for the Management of Desert Tortoise Habitat (BLM 2000)
FY	fiscal year
GID	General Improvement District
GIS	geographic information system
GPS	global position system
ha	hectare
HAPs	hazardous air pollutants
HCP	habitat conservation plan
HERS	Home Energy Rating System
Hz	Hertz
IA	Implementing Agreement
IMPLAN	IMpact analysis for PLANning
in	inch(es)
in/sec	inches per second
I-O	input-output
km	kilometer
KOP	Key Observation Point
LCCRDA	Lincoln County Conservation, Recreation, and Development Act of 2004
LCLA EA	Environmental Assessment for the Lincoln County Land Act of 2000 Phase I Implementation
LCLA	Lincoln County Land Act of 2000
LCPD	Lincoln County Power Department
LCR MCP	Lower Colorado River Multi-species Conservation Program (Jones and Stokes 2004)
LCR	Lower Colorado River
LCTS	Lincoln County Telephone System
LCWD	Lincoln County Water District
Ldn	day-night sound level

LLC	limited liability company
LOS	level of service
LVFO	Las Vegas Field Office
LVVWD	Las Vegas Valley Water District
MBTA	Migratory Bird Treaty Act
MDM	Mount Diablo Meridian
MGD	million gallons per day
mm	millimeters
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MRRIP	Muddy River Recovery Implementation Program
MS4S	Municipal Separate Storm Sewer Systems
MSHCP	Multiple-Species Habitat Conservation Plan
msl	mean sea level
mtDNA	mitochondrial deoxyribonucleic acid
MVNWR	Moapa Valley National Wildlife Refuge
MVWD	Moapa Valley Water District
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NBAQP	Nevada Bureau of Air Quality Planning
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOT	Nevada Department of Transportation
NDOW	Nevada Division of Wildlife
NEPA	National Environmental Policy Act of 1969
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NNHP	Nevada Natural Heritage Program
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes

NSPS	New Source Performance Standards
NSR	New Source Review
NSWA	Nevada State Water Authority
NTS	Nevada Test Site
NVR 100000	NDEP General Permit
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
OHV	off-highway vehicle
PARC	Partners in Amphibian and Reptile Conservation
pc/h/ln	passenger cars per hour per lane
PM	particulate matter
PM_{10}	10 micron particulate matter
$PM_{2.5}$	2.5 micron particulate matter
PMRA	Pest Management Regulatory Agency
ppm	parts per million
PSD	Prevention of Significant Deterioration
PSP	Permanent Study Plots
PUDs	Planned Unit Developments
RCI	Resource Concepts Incorporated
RCRA	Resource Conservation and Recovery Act
RESNET	Residential Energy Services Network
RIP	Recovery Implementation Program
RLFWG	Relict Leopard Frog Working Group
RM	River Mile
RMP	Resource Management Plan
ROCs	reaction organic compounds
RODs	Records of Decision
ROW	right-of-way
Services	USFWS and NMFS, collectively
Settlement Agreement	Agreement for Settlement of all Claims to Groundwater in the Coyote Spring Basin (2002)
SHPO	State Historic Preservation Office
SIPs	State Implementation Plans
SL	standard length
SMS4	Small Municipal Separate Storm Sewer Systems
SNHBA	Southern Nevada Home Builders Association
SNPLMA	South Nevada Public Land Management Act (Public Law 105-263)
SNWA	Southern Nevada Water Authority

SPPC	Sierra Pacific Power Company
Stipulation	stipulation between LCWD/Vidler and USFWS regarding water rights
SO_2	sulfur dioxide
SU	Single Unit Truck
SVL	snout to vent length
SWANCC	Solid Waste Agency of Northern Cook County
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWReGAP	Southwest Regional Gap Analysis Project
TAC	Technical Advisory Committee
TCF	The Conservation Fund
TESS	Threaten and Endangered Species System
TL	total length
Tribe	Moapa Band of Paiutes
TRP	Tuffy Ranch Properties, LLC
TSC	Technical Steering Committee
TSS	total suspended solids
TUP	Temporary Use Permit
UNR	University of Nevada at Reno
URTD	upper-respiratory tract disease
USAF	U.S. Air Force
USBR	U.S. Bureau of Reclamation
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USGS-BRD	U.S. Geological Survey Biological Resources Division
UST	underground storage tanks
VES	visual encounter survey
Vidler	Vidler Water Company
VOC	volatile organic compound
VRHCP	Virgin River Habitat Conservation Plan
VRHCRP	Virgin River Habitat Conservation and Recovery Program
VRCMA	Virgin River Conservation Management Assessment
VRM	Visual Resource Management
VVWD	Virgin Valley Water District
WOUS	waters of the United States

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Executive Summary

Executive Summary

This Environmental Impact Statement (EIS) evaluates the impacts of implementing the Coyote Springs Investment LLC's (CSI) Multiple-Species Habitat Conservation Plan (MSHCP); issuance of an Endangered Species Act (ESA) Section 10(a)(1)(B) incidental take permit (incidental take permit) by the U.S. Fish and Wildlife Service (USFWS) based upon this plan; issuance of a Clean Water Act (CWA) Section 404 permit for affected waters of the United States (WOUS) by the U.S. Army Corps of Engineers (Corps); the reconfiguration of the CSI private and Bureau of Land Management (BLM) leased lands; and, as proposed by the BLM, management of the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and in accordance with the CSI MSHCP. In addition, the EIS analyzes the construction of detention basins for the CSI Development in the BLM utility corridor west of U.S. Highway 93 in Lincoln County.

Under the Preferred Alternative, USFWS would issue an incidental take permit, the Corps would issue a Section 404 permit, and BLM would reconfigure the land holdings and manage the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP. BLM would also issue a right-of-way grant to CSI for the detention basins west of U.S. Highway 93 in Lincoln County. [Although a component of the Preferred Alternative, this right-of-way grant would not be included in the CSI MSHCP (Volume 2 of this document).] The Preferred Alternative would allow CSI to develop a new town in southern Lincoln County, Nevada, to address a need for housing and economic opportunity in the county. This town, consisting of a master planned community, would include residential, commercial, and industrial land uses and several environmental conservation features to address the presence of sensitive biological resources. Upon completion of a cadastral survey and in compliance with applicable laws, BLM would issue a final patent and amend the Land Lease Agreement to reflect the components of the Preferred Alternative.

Components of the proposed planned town include: 1) community development and construction activities, 2) recreational facilities and open space, 3) utility infrastructure, 4) water supply infrastructure and management, 5) flood control structures development and maintenance including stormwater management, and 6) resource management features.

Under the Preferred Alternative, the planned town would affect critical habitat for the desert tortoise (*Gopherus agassizii*) and may affect habitat for other species that are listed as threatened or endangered under the ESA. WOUS would also be affected by constructing this planned community. To comply with Section 10(a)(1)(B) of the ESA and to obtain a permit for incidental take of listed species because of CSI's activities, CSI has prepared a MSHCP. The CSI MSHCP's goal is to achieve a balance between 1) long-term conservation and recovery of WOUS and native species of plants and animals present on CSI lands; and 2) the orderly and beneficial use of private land in order to promote the economy, health, and well-being of the future population in the planned town on CSI lands within Lincoln County. CSI has also concurrently prepared a Section 404 permit application, which was submitted to the Corps on September 13, 2007 (Appendix P).

PURPOSE AND NEED FOR FEDERAL ACTIONS

CSI, the Applicant, proposes to develop a master planned town (CSI Development) in southern Lincoln County, Nevada. The need for the USFWS, Corps, and BLM actions is based on the potential that these activities proposed by CSI on their property and lease lands could result in the take of the Covered Species[1] (desert tortoise, banded Gila monster, western burrowing owl, Moapa dace, Virgin River chub) and effects to WOUS, thus, creating the need for incidental take and Section 404 permits. Issuance by the USFWS of an ESA Section 10(a)(1)(B) incidental take permit, issuance of a CWA Section 404 permit by the Corps, and issuance of a right-of-way grant and reconfiguration of leased federal lands by the BLM are federal actions that trigger review under NEPA (42 U.S.C 4321-4347).

[1] Species for which coverage under an incidental take permit (ESA Section 10(a)(1)(B) permit) is requested.

The USFWS is the lead agency for this EIS, and the Corps and BLM are cooperating agencies[2]. This EIS has been developed for the following purposes: (1) evaluate the impacts of implementing the Coyote Springs Investment LLC's MSHCP by the Executive Committee (i.e., USFWS, CSI, and BLM); (2) address the issuance of an ESA Section 10(a)(1)(B) incidental take permit by the USFWS based upon this plan; (3) protect and conserve the Covered Species and their habitat for the continuing benefit of the people of the United States; (4) address the issuance of a permit pursuant to Section 404 of the CWA (33 U.S.C. 1344) and authorization to discharge dredged or fill material into WOUS (desert dry wash habitat); (5) address the reconfiguration of the public and private land holdings; (6) address the management of the BLM leased lands with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988 and implementation of the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species; (7) address the issuance of a right-of-way grant for detention basins on BLM lands west of U.S. Highway 93; and (8) ensure compliance with the ESA, CWA, NEPA, and other applicable federal laws and regulations. The agencies will determine whether the Preferred Alternative or another action alternative should be permitted to proceed.

PUBLIC SCOPING

Public involvement related to residential development within the CSI lands began in October 2001, when a Technical Steering Committee (TSC) was convened to obtain input from stakeholders. The USFWS and CSI also initiated a Biological Advisory Subcommittee (BAS) to work through concerns and issues relating to the desert tortoise, other species, and residential development on CSI lands.

A Notice of Intent (NOI) to prepare an EIS and begin scoping was published in the Federal Register on December 4, 2001. The comment period ended on February 4, 2002. After the 2001 scoping process, it was decided that CSI's privately owned land in Clark County would be included in the Clark County MSHCP. As a result, ESA compliance requirements for CSI activities on their private lands in Clark County are covered under the Clark County MSHCP. Therefore, the focus of the proposed CSI MSHCP is CSI's private land in Lincoln County, as well as lease land in Lincoln and Clark counties. Because the area covered by the CSI MSHCP was modified, a second NOI was published in the Federal Register on September 12, 2006 (71 CFR 53704–53706). Public scoping meetings were held in Alamo and Moapa, Nevada on September 26 and 27, 2006, respectively. The second NOI was republished in the Federal Register on November 2, 2006, (71 CFR 64555–64556) to correct contact information provided in the notice and extend the comment period to December 4, 2006. Public comments received during the 2001 and 2006 scoping processes were considered and incorporated, as appropriate, into the Draft EIS and Draft CSI MSHCP.

On November 2, 2007, the USFWS published the Draft EIS, Draft CSI MSHCP, and Draft Implementation Agreement. The 60-day public comment period closed on January 2, 2008. When requested, individual extensions until January 14, 2008, were granted. Responses to public comments can be found in Appendix Q; and have been incorporated into the EIS, CSI MSHCP, and Implementation Agreement, as appropriate.

AGENCY CONSULTATION

Of the agencies involved in this project, the Corps has been designed the lead agency for Section 106 and tribal consultation. The Corps is currently in the process of the Section 106 and tribal consultation. A final decision will not be made until the Section 106 consultation is completed.

ALTERNATIVES

No Action Alternative

Under the No Action Alternative, the proposed CSI MSHCP would not be adopted, USFWS would not issue an incidental take permit, and the Corps would not issue a Section 404 permit to CSI for the master planned community under Section 10(a)(1)(B) of the ESA and Section 404 of the CWA, respectively. Under the No

[2] The BLM has independently reviewed this EIS and has concurred with the USFWS' alternatives, analysis, and conclusions.

Action Alternative, BLM would not reconfigure the land holdings or issue a right of way for detention basins on BLM land west of U.S. Highway 93.

The existing land configuration of CSI private and lease lands would be maintained. Lease lands would remain an island within the privately-owned land. Land leased by CSI from BLM in Lincoln County (7,548 acres) would be available for the full suite of activities authorized in the Land Lease Agreement (Appendix G). If development occurred under the existing configuration, the lease lands would likely need to be used for roads and utilities to support and connect the projects that would occur on both the east and west sides of the leased area. As a result of choosing the No Action Alternative, CSI private lands in Lincoln County, totaling 21,454 acres, could be sold to individual landowners, who would be responsible for obtaining required incidental take permits. If development were to occur, then the individual owners would be responsible for developing infrastructure, including roads and water, sewer, and power facilities.

Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

Under the Preferred Alternative, the USFWS would issue an incidental take permit and the Corps would issue a Section 404 permit to CSI for the master planned community under Section 10(a)(1)(B) of the ESA and Section 404 of the CWA, respectively, based upon the Covered Activities and conservation measures described below. The BLM would reconfigure the land holdings and manage the leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species. In addition, BLM would issue a right-of-way to CSI for detention basins west of U.S. Highway 93 in Lincoln County. These detention basins would not be addressed by the MSHCP; instead, separate Section 7 consultation would occur.

The Development Area is located on the east side of U.S. Highway 93 and straddles the Pahranagat Wash, extending to the Lincoln County-Clark County line to the south.

COVERED ACTIVITIES

The proposed phased CSI Development on 21,454 acres of private land would include residential housing, mixed-use urban villages and public buildings (Figure ES-1). The new town consisting of a planned community would eventually include approximately 111,000 residential dwelling units at a density of 5.0 units per gross acre. Approximately 70,000 afa of water would be needed to support the development at build out. The master planned community in the Development Area would include the following features:

- Residential areas including homes, residential villages, mixed-use urban villages, and various other types of residential villages;
- Public buildings such as schools, library, and public services (e.g., government, fire, police);
- Hotels, resorts, casinos;
- Commercial and light industrial development areas;
- Agriculture (nursery operations – trees, plants and sod farm[s]);
- Roads: (1) Existing roads would be maintained and improved (widening of U.S. Highway 93 and/or State Route 168); and (2) New roads would be constructed and maintained within the Development Area;
- Heli-port(s); and
- Up to four bridges spanning the Pahranagat Wash and additional bridges or crossings would likely be required.

Recreational facilities and open space areas would serve residents and visitors. Utilities and other infrastructure would be developed to serve the master planned community. The water supply infrastructure and management activities would include construction and maintenance of water treatment, wells, storage facilities, and other infrastructure.

The existing desert dry washes within the Development Area do not have the capacity to adequately convey floodwaters through the Development Area and could endanger the health, safety, and welfare of residents during a flood event. Some of the desert dry washes would be relocated, enlarged and expanded to meet acceptable flood conditions and comply with EPA and State of Nevada regulations. Resource management features would include the easements for WOUS, land ownership realignment, creation and management of the Coyote Springs Investment Conservation Lands (CSICL), and collection and salvage of native plants. Subsequent to completion of the land adjustments described herein, the BLM leased land would be managed by BLM in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP. Approximately 7,548 acres of land in Lincoln County would be included in the CSICL and would be adjacent to approximately 6,219 acres of conserved lease land within Clark County, totaling 13,767 acres of land to be preserved. Any activities that occur within this area would be consistent with passive recreational use (e.g., passive or non-motorized recreation such as hiking, wildlife viewing, rock climbing, mountain biking, and horseback riding using existing trails) or scientific research uses.

Conservation Measures

MOAPA DACE AND VIRGIN RIVER CHUB CONSERVATION COMMITMENTS

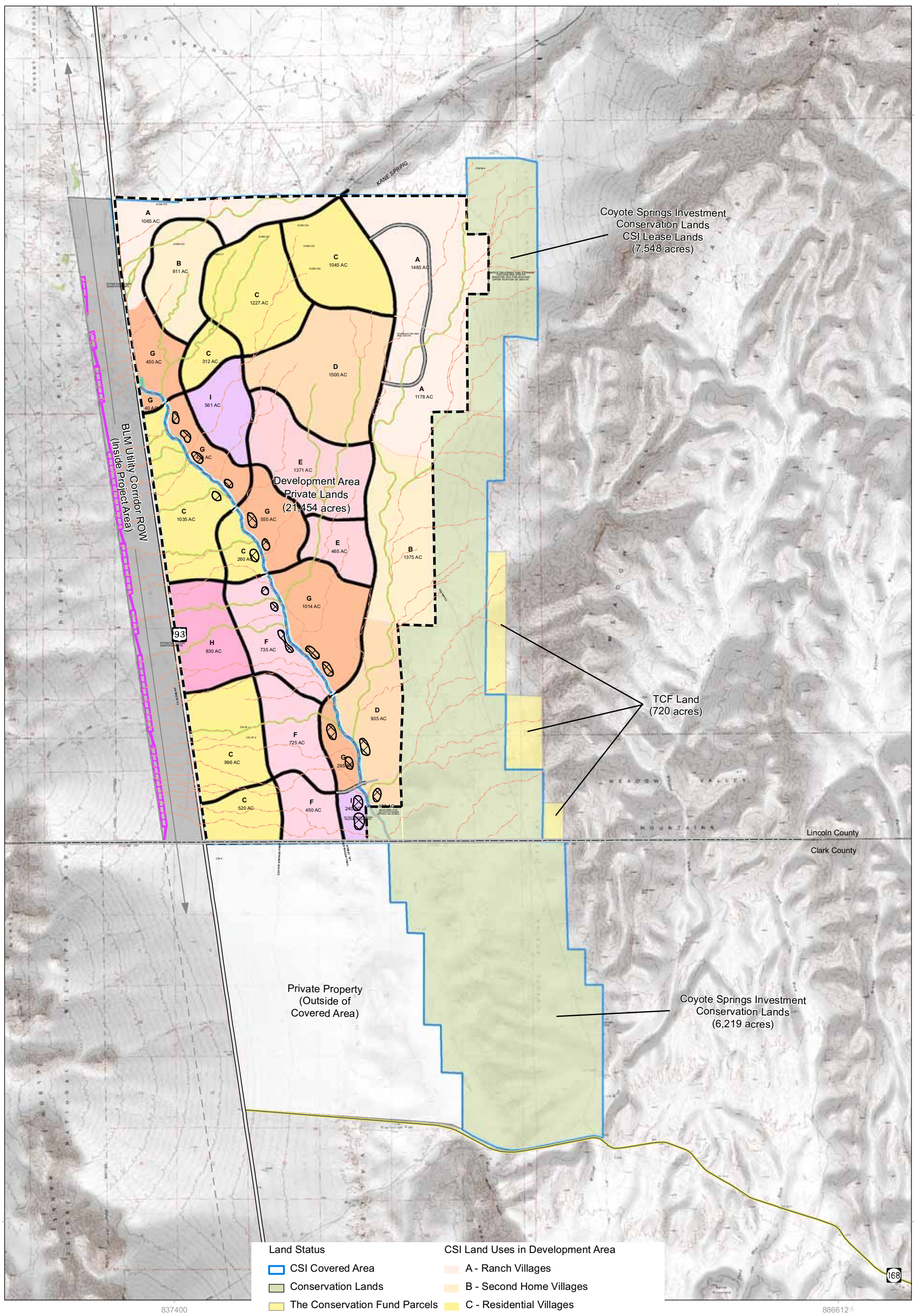
Avoidance and minimization measures to protect habitat in WOUS for Moapa dace and Virgin River chub are identical to measures proposed for WOUS in the Mitigation Plan (Appendix J) and include the following:

- Avoidance of construction activities on upland buffers and protected WOUS. Upland buffers and protected WOUS would be included in a Perpetual Conservation Easement Grant, and restored WOUS protected in a Drainage and Maintenance Easement.
- Avoidance of construction activities within the CSICL.
- Temporary construction fencing around preserved desert dry washes.
- Implementation of stormwater plan and erosion control measures.
- Implement conservation measures related to stormwater and wastewater treatment, Chemical Application Management Plan (CHAMP), weed management, and regional fire rehabilitation.
- Restoration of 63.4 acres of WOUS and avoid and protect 32.1 acres of existing WOUS.
- Establishment of a monitoring and maintenance period of five years for each restored WOUS. The Drainage and Maintenance Easement on each of these WOUS would include ongoing, annual monitoring of wash conditions and maintenance as necessary.
- Development of a Long-term Protection Plan and associated funding.

DESERT TORTOISE, BANDED GILA MONSTER, AND WESTERN BURROWING OWL CONSERVATION COMMITMENTS

Conservation measures to benefit desert tortoise, banded Gila monster, and western burrowing owl, include the following:

- Desert tortoise clearance surveys in the Development Area and translocation of displaced tortoises to suitable sites as directed by the USFWS's Desert Tortoise Recovery Office.
- Surveys conducted for the western burrowing owl and use of the USFWS 's recommendations on protecting burrowing owls at construction sites (USFWS 2007).
- Use of Nevada Division of Wildlife's protocol for the banded Gila monster at construction sites (NDOW 2007).
- Phased approach to development – development would be limited to 2,000 acres per year for the first eight years.



Land Status
- CSI Covered Area
- Conservation Lands
- The Conservation Fund Parcels
- BLM Utility Corridor
- Development Area
- WOUS
- 100 Foot WOUS Buffer
- 50 Foot WOUS Buffer
- Detention Basins
- Retention Basins
- County Line
- Highway
- State Route

CSI Land Uses in Development Area
- A - Ranch Villages
- B - Second Home Villages
- C - Residential Villages
- D - Adult Villages
- E - Vacation Villages
- F - Mixed-Use Urban Villages
- G - Open Space Fringe Development
- H - Highway Commercial Villages
- I - Commercial/Industrial Park Villages

0.5 0.25 0 0.5 1 Miles

CSI Planned Development Project Final EIS

Figure ES-1
Configuration of the Preferred Alternative Including Land Uses, Conservation Easements and the Coyote Springs Conservation Lands

ENTRIX

- Best management practices for construction, operations and maintenance activities, which include general site measures for ground disturbance activities, sediment and erosion control, water quality measures, fire conservation measures, trash management, and conservation education.
- Pet restrictions and management.
- Temporary and permanent desert tortoise exclusion fencing.
- Weed management plan.
- Mitigation fee of $800 per acre of disturbance plus a $750,000 fee to be used for implementation of the CSI MSHCP.

Under the Preferred Alternative, an adaptive management plan (AMP) would be implemented for the length of the 40-year incidental take permit. The AMP would monitor the effectiveness of conservation actions and management prescriptions in meeting established biological goals, recommend alternative actions to pursue in the event that the goals are not being met, and incorporate any other information, including third-party scientific research, that has bearing on how best to meet the biological goals.

The phased approach to development (including up to 2,000 acres of disturbance per year for the first eight years) would ensure that for the first eight years, there would be timely effectiveness monitoring of implementation of the proposed avoidance, minimization, and conservation measures for the Covered Species in the CSI MSHCP. Recommendations for alternative conservation actions could be made and implemented through the AMP if necessary, before the next 2,000 acres would be disturbed.

Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

Alternative 1 would include the issuance of an ESA Section 10(a)(1)(B) incidental take permit, a Section 404 permit for the CSI Development in Lincoln County, Nevada, conservation measures based on a Regional Habitat Conservation Plan, land reconfiguration pursuant to the Land Lease Agreement and to the Nevada-Florida Land Exchange Act of 1988, and construction of detention basins within the BLM utility corridor west of U.S. Highway 93. The detention basins would not be addressed under a Regional Habitat Conservation Plan; instead, separate Section 7 consultation would occur. Activities would be similar to those described for the Preferred Alternative, with the following exceptions.

A total of approximately 29,002 acres of land (21,454 acres of private land plus 7,548 acres of lease land with a 99-year lease with an automatic 99-year extension) would be available for development or other authorized uses. Approximately 7,548 acres of land leased by CSI from the BLM in Lincoln County would be subject to some of the covered activities described under the Preferred Alternative, as authorized in the Land Lease Agreement. Additionally, construction of detention basins would occur on up to 244 acres in the BLM utility corridor west of U.S. Highway 93 in Lincoln County. The uses for leased land could include constructing and operating roads, utility lines, storage facilities and wells, and any other lawful purpose that the Secretary of the Interior may authorize, subject only to the requirements of the Nevada-Florida Land Exchange Authorization Act of 1988 and to reasonable requirements of the Secretary of the Interior for the protection of the desert tortoise and any other species of fish, wildlife, or plants. These lands would not be included as part of the CSICL. Substantially fewer acres of private and lease lands would be conserved compared to the Preferred Alternative, which would reduce opportunities for on-site mitigation on private land and increase the need for off-site mitigation on adjacent federal land (as is the case with other Habitat Conservation Plans [HCPs] in Nevada).

Approximately 29,002 acres of CSI private and lease lands would be available for development and authorized activities immediately upon issuance of an incidental take permit and other required regulatory permits. New town development and construction activities would be similar as described under the Preferred Alternative, but the extent of activities would be greater than the Preferred Alternative to support a higher density and an increased area of development. A new town consisting of a planned community would eventually include approximately 131,879 residential dwelling units at a density of 6.5 units per gross acre. Approximately 85,000 afa of water would be needed to support the development at build out.

Full project build out would be implemented immediately rather than the phased approach described under the Preferred Alternative. Therefore, some components of the adaptive management process proposed for the Preferred Alternative would not be implemented under Alternative 1. Effectiveness of conservation measures would be evaluated as part of an overall AMP, but a phased approach for implementation and monitoring of conservation measures would not be used under Alternative 1. Adaptive management activities for habitat within the Development Area for terrestrial species would be more limited, as fewer opportunities for comparison of the Development Area with other undeveloped areas would exist because the leased lands would be developed, not protected.

The private and lease lands would be reconfigured. The reconfigured layout would consolidate the private land to the west and the leased land along the east and north side of the property. A series of conservation measures for the Covered Species and WOUS would be implemented. Conservation measures for the desert tortoise, banded Gila monster, and western burrowing owl would include the following key avoidance, minimization, and mitigation measures:

- Desert tortoise clearance surveys in the Development Area and translocation of displaced tortoises to suitable sites as directed by the USFWS's Desert Tortoise Recovery Office.
- Surveys conducted for the western burrowing owl and use of the USFWS 's recommendations on protecting burrowing owls at construction sites (USFWS 2007)
- Use of Nevada Division of Wildlife's protocol for the band Gila monster at construction sites (NDOW 2007)
- Regional fencing, refuse disposal, and education programs would be designed to protect covered species from the potential effects associated with the interaction of the development of a new town.
- Mitigation fees of $550 (consistent with a regional HCP) for each acre of desert tortoise habitat developed.
- Conservation measures related to stormwater and wastewater treatment, Chemical Application Management Plan (CHAMP), weed management, and regional fire rehabilitation would be developed and implemented, which would benefit terrestrial wildlife and plant species.

Conservation measures for WOUS (desert dry washes) and Moapa dace and Virgin River chub would be implemented for this alternative. However, because CSI leased land in Lincoln County would not be protected in the CSICL, the potential for impacts to WOUS would be greater than what would occur on additional land, approximately 7,548 acres in size. Covered Species would be the same as described under the Preferred Alternative. An AMP similar to that described for the Preferred Alternative would be implemented.

Table ES-1 Summary of Effects for the Coyote Springs Planned Development Project EIS

Impact Topic	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Biological Resources			
Vegetation	No effects to vegetation would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, then up to 21,454 acres of vegetation could be permanently lost or altered due to construction activities. However, given the lack of infrastructure in the area, it would be unlikely that all the private lands would be developed. Lands leased by CSI (7,548 acres) could also be developed for roads or utilities, which would result in additional disturbance and loss of vegetation.	Development of the planned community would result in the loss of native vegetation of 20,716 acres in the Development Area and up to 244 acres in the BLM utility corridor. Because of cluster development design and setbacks from all preserved WOUS, total acreage affected within the 21,454-acre Development Area would be minimized. The CSICL would set aside 13,767 acres where construction activities would not occur. Vegetation would be preserved in the reserve area. Overall, potential vegetation lost because of development activities in the Development Area would be a small portion of total vegetation available within Lincoln County.	Direct effects would be similar to those described for the Preferred Alternative, except the loss of vegetation would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. In addition, no benefits from adding lands to the CSICL would occur.
Wildlife	No effects to wildlife would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, then up to 21,454 acres of wildlife habitat could be permanently lost or altered due to construction activities. However, given the lack of infrastructure in the area, it would be unlikely that all the private lands would be developed, which would also limit increases in traffic and resulting wildlife mortality. Lands leased by CSI (7,548 acres) could also be developed for roads or utilities, which would result in additional disturbance and loss of habitat.	Mitigation measures such as in-channel construction occurring when there is no surface flow would offset direct effects to aquatic species from construction and restoration of ephemeral dry wash habitats. Community development within the Development Area would result in the direct loss of 20,716 acres of habitat and up to 244 acres in the BLM utility corridor. Establishment of the CSICL would protect over 13,767 acres of creosote-bursage scrub habitat. The land configuration under Preferred Alternative would also maintain habitat connectivity between these 13,767 acres and BLM Areas of Critical Concern to the east and north. CSI would avoid all known nests and nesting colonies of migratory birds to prevent any negative direct effects to migratory birds from construction.	For aquatic species, effects would be similar in nature to those described for the Preferred Alternative, although a larger amount of land would be impacted. Terrestrial species that depend on this habitat may be displaced or lost within the 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor, greater than what would occur under the Preferred Alternative.
Special Status Species	No effects to special status species would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, then up to 21,454 acres of habitat for desert tortoise, banded Gila monster, and western burrowing owl could be permanently lost or altered due to construction activities. However, given the lack of infrastructure in the area, it would be unlikely that the entire private lands would be developed. Lands leased by CSI (7,548 acres) could also be developed for roads or utilities, which would result in additional disturbance and loss of habitat. Section 10 permits would be required for any activities that occurred and would result in mitigation to compensate for any effects to federally listed species, such as the desert tortoise.	Land development activities would eliminate up to approximately 20,716 acres of designated desert tortoise critical habitat in the Development Area (21,454 less 25.2 acres of protected, existing WOUS and 712.5 acres of adjacent upland buffer habitat) and up to 244 acres of designated desert tortoise critical habitat in the BLM utility corridor. This loss would be the result of conversion of land from desert scrub to human residential, commercial, recreational, and light industrial use and areas of WOUS restoration. The loss of up to 20,960 acres of critical habitat within the 427,900-acre Mormon Mesa CHU represents approximately 5 percent of the critical habitat unit. These lands also provide habitat for banded Gila monster and western burrowing owl. Clearance surveys, translocation, and fencing conservation measures would avoid and minimize incidental take of desert tortoise, banded Gila monster, and western burrowing owl to the maximum extent possible. Mitigation fees and lands conserved in the CSICL (13,767 acres in Lincoln and Clark counties) would count as mitigation for effects to desert tortoise habitat and critical habitat, along with effects to banded Gila monster habitat. Adverse effects could also occur to Moapa dace, Virgin River chub, Evaluation Species, and Watch List Species, but these effects would be offset by avoidance, minimization, and mitigation measures.	Direct effects to the desert tortoise, banded Gila monster, and western burrowing owl would be similar to those described for the Preferred Alternative, although the magnitude of habitat loss and other effects would be larger, given that the effects from Covered Activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. Mitigation fees would count as mitigation for effects to desert tortoise habitat and critical habitat, along with effects to banded Gila monster and western burrowing owl habitat. Less monitoring information on desert tortoise, banded Gila monster, and western burrowing owl would be available under this alternative, as all private lands would immediately be built out upon project implementation. Adverse effects could also occur to Moapa dace, Virgin River chub, Evaluation Species, and Watch List Species, but these effects would be offset by avoidance, minimization, and mitigation measures. Adverse effects to terrestrial Evaluation and Watch List Species would be greater than under the Preferred Alternative.
Waters of the United States	No effects to WOUS would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, this could potentially result in development affecting WOUS associated with the Pahranagat Wash. Lands leased by CSI could be developed for roads or utilities, which would also could result in effects to WOUS. Section 404 permit(s) would be required and mitigation would offset any adverse effects to WOUS.	Under the Preferred Alternative, 31.7 acres of WOUS would be impacted in order to meet flood control standards when constructing the CSI Development in the Development Area and the BLM utility corridor. Impacts to 25.2 acres of WOUS in the Development Area and BLM utility corridor would be avoided. Within the CSICL, all 6.9 acres of WOUS would be protected from future disturbances. An additional 59.8 acres of WOUS in the Development Area and 3.6 acres in the CSICL would be restored. The 59.8 restored acres and 25.2 acres of existing WOUS in the Development Area would be protected in a conservation easement, along with 712.5 acres of upland habitat that would provide a 100-foot buffer on each side of all preserved WOUS including the Pahranagat Wash incised ephemeral channel and a minimum range of 40- to 80-foot buffer on each side of other desert dry washes within the Development Area. Overall, the Preferred Alternative would ensure that the WOUS within the project area would be protected and/or restored.	Of the 63.8 acres of delineated WOUS in the Development Area and BLM utility corridor, 22.6 acres of WOUS would be avoided. A conservation easement totaling 437.2 acres would protect all avoided WOUS, all restored WOUS, and upland buffer habitat adjacent to existing, preserved WOUS within the Development Area. Activities occurring on the lease lands in Lincoln County in accordance with the Land Lease Agreement could result in additional adverse impacts to WOUS through the construction of road crossings and other activities.

Table ES-1 Summary of Effects for the Coyote Springs Planned Development Project EIS

Impact Topic	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Hydrology and Water Quality	No effects to hydrology and water quality would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, Section 404 permits would be required for any alterations of surface water hydrology, which would mitigate any adverse effects. Groundwater could be affected if individual residences were established and domestic wells were installed. The amount removed for each residence would be of a smaller amount of water (up to 2.0 afa). Effects to groundwater, if individual residences were to be developed and use domestic wells, would be expected to be minimal. However, if a large number of individual residences were developed (e.g., 10,000 residences), which would be unlikely given a lack of infrastructure, a potentially significant amount of water (e.g., 22,000 afa) could be removed from the alluvial aquifer.	Flood control operations inherent in the proposed alteration of washes, construction of bank stabilization structures, and construction of detention basins have the potential to alter stream flow and sediment transport. These effects would be considered adverse but would not be significant due to the limited changes in hydrology anticipated within in a system with very infrequent flows and because of project design. The new conveyance channels through the Development Area would be designed to accommodate the anticipated stormwater flows released from the detention basins following applicable standards. Therefore, the Preferred Alternative would result in slight positive direct effects to the hydrology of the WOUS within the Development Area by controlling flooding in the human environment. In the long term, natural buffers, stormwater systems and regulations regarding management of golf courses and other manicured landscape areas would limit the potential for nutrient-rich runoff to enter surface waters. Ground disturbance, alteration of WOUS, and increased impervious surfaces could potentially affect water quality through sedimentation and pollution. A Stormwater Management Plan and other mitigation measures would minimize adverse effects.	Alternative 1 would produce greater negative direct and indirect effects as compared to the Preferred Alternative because activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. Activities on the 21,087 acres of private lands available for development in the Development Area, after creation of a Perpetual Conservation Easement Grant and Drainage and Maintenance Easement, would be of a greater density resulting in lower infiltration rates than for the Preferred Alternative. Potential effects to water quality would be greater than under the Preferred Alternative due to lack of a phased development approach and a greater extent of land disturbed and developed. However, a Stormwater Management Plan and other mitigation measures would minimize adverse effects.
Cultural Resources	No effects to cultural resources would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, individual incidental take and Section 404 permits could be issued, which could make 29,002 acres of private and leased land available for development. Of the 29,002 acres, only 22,174 acres has been surveyed for the presence of cultural resources. All 29,002 acres would be subject to Section 106 Consultation under NHPA should development occur on these properties.	Concept plans indicate that most, if not all, historical and prehistorical resources within the Development Area and BLM utility corridor could be adversely affected by development activity, namely the ground disturbing activities associated with the Preferred Alternative. To avoid, minimize, and/or mitigate any potential adverse effects, avoidance and mitigation measures would be implemented through an existing MOU, or through a newly developed PA or MOU, if the existing MOU does not serve the needs of all the entities involved (Corps, CSI, Nevada SHPO, BLM, USFWS). These effects would be mitigated through Section 106 consultation with the Nevada SHPO. This consultation will be completed and the agreement would be consummated prior to issuance of a decision.	The potential for adverse effects would be greater under Alternative 1 than the Preferred Alternative, because ground disturbance would occur in the leased lands, in addition to the BLM utility corridor and Development Area. To avoid, minimize, and mitigate any potential adverse effects, avoidance and mitigation measures would be implemented through an existing MOU, or through a newly developed PA or MOU, if the existing MOU does not serve the needs of all the entities involved.
Soils and Geologic Resources	No effects to soils and geologic resources would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, direct effects to soils on up to 21,454 acres could occur. Lands leased by CSI could be developed for roads or utilities, which would result in soil loss and disturbance on up to an additional 7,548 acres. It would be unlikely that all of these lands would be disturbed, due to a lack of infrastructure. Soil disturbances and loss would be minimized by mitigation measures required by individual permits. Thus, no effects to geological resources would occur.	Although soils would be superficially disturbed over large areas (approximately 16,000 acres initially and up to 20,960 acres in the project area), mitigation measures would minimize soil loss and disturbance. Long-term adverse effects would result from the development of impervious surfaces on top of soils. Other areas would eventually return to normal productivity and fertility through revegetation with native plants. Geological resources would not be affected.	Direct effects to soils and geological resources would be similar to the Preferred Alternative, although the magnitude would be greater as development would occur across a greater area (29,002 acres) and all development would occur immediately. Because of this, the potential for soil loss through wind erosion would be greater than for the Preferred Alternative.
Ecologically Critical Areas	No effects to ecologically critical areas would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, only indirect effects would occur to Ecologically Critical Areas, as residents of the development would be likely to use the nearby BLM lands (including the ACECs). This could introduce the potential for increased social trails, increased use of OHVs, and other effects of recreation on these ecologically critical areas. However, it is assumed that future incidental take permits would include provisions to minimize these adverse effects on adjacent ACECs.	Only indirect effects would occur to Ecologically Critical Areas. Coordinated, phased development of Development Area would result in loss of desert tortoise habitat near three Areas of Critical Concern. The land reconfiguration that would occur under the Preferred Alternative would ensure the maximum connectivity of the CSICL, with the adjacent Mormon Mesa ACEC. Protecting 13,767 acres of land in this CSICL would minimize the effects of habitat fragmentation on these Areas of Critical Concern. Conservation and mitigation measures would minimize increases in social trails and adverse effects to desert tortoise and other wildlife. Existing BLM regulations for ACECs would address the expected increased uses of OHVs.	Under Alternative 1, a new land configuration would occur, which would place the lease lands to the north and east of the private CSI lands to be developed. However, the CSICL would not protect lands in Lincoln County; therefore, while conservation and mitigation measures would have the same effect as described for under the Preferred Alternative, no land would be protected adjacent to the ACECs.
Wilderness Areas	No effects to wilderness areas would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, such development could decrease wilderness quality in adjacent wilderness areas. Increases in social trails, illegal OHV use, and reduction in solitude are some of the effects that could occur.	Only indirect effects to wilderness areas could occur under the Preferred Alternative. The land reconfiguration would ensure the maximum connectivity of the CSICL with the adjacent Meadow Valley Range Wilderness area, minimizing potential effects to wilderness through limiting direct access to the wilderness, except on foot. CCRs for maintaining a dark sky and the distance from the Development Area to the wilderness and wilderness study areas would help minimize effects from the Development Area (e.g., noise, light pollution, social trails) on these areas.	Only indirect effects to wilderness areas could occur under Alternative 1. Under Alternative 1, no land would be protected adjacent to the wilderness areas. This could potentially allow further development near these wilderness areas in the future. Noise levels would have the potential to affect one or more of the wilderness areas if construction activities on the lease lands occurred near these areas. Light pollution from the development and the lease lands could also be an adverse effect, but CCRs for maintaining a dark sky would help minimize some of these potential effects from the Development Area.
Visual Resources	No effects to visual resources would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, development on individual landowners' lands could affect the local viewshed. However, the Coyote Springs Planned Unit Development Code, already in place for the area, would ensure that no substantial adverse effects to visual resources would occur.	Under the Preferred Alternative, development would be limited to the 21,454-acre Development Area, which is located along U.S. Highway 93 at the same elevation as the road. The CSICL would protect higher elevations to the east through a conservation easement, thereby limiting the effects of development to a smaller viewshed (area viewable from a given site). Changes would all occur in compliance with the Coyote Springs Planned Unit Development Code. Modifications would also occur in the BLM utility corridor through the construction of detention basins.	Increased housing units and development of the lease lands would also result in greater alterations to visual resources than under the Preferred Alternative. This would result in a greater effect to the area's viewshed, as the development would be more noticeable from passersby on U.S. Highway 93. However, all development would occur in compliance with the Coyote Springs Planned Unit Development Code. Modifications would also occur in the BLM utility corridor through the construction of detention basins.

Table ES-1 Summary of Effects for the Coyote Springs Planned Development Project EIS

Impact Topic	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Air Quality	No effects to air quality would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, individual landowners would be responsible for obtaining project development permits that would contain mitigation measures. Because mitigation measures would reduce effects, any increases in particulate matter and hydrocarbon-based contaminants from construction would be temporary in nature and unlikely to exceed air quality criteria.	Temporary effects to air quality from particulate matter and hydrocarbon emissions from construction activities would be likely to occur. Screening results show that in no case would individual NAAQS for any pollutant and averaging time be exceeded solely due to emissions from construction. Construction emissions alone would not violate any air quality standard or contribute substantially to an existing air quality standard violation (i.e., PM10). Thus, there would be no significant air quality impact from construction since none of the significance criteria defined above would be met. Indirect effects from local vehicle traffic, commuter traffic, and OHV use would be minor. Air quality modeling indicates that these effects would be less than significant.	Because the full buildout of the planned community could occur without time restrictions, it would be more likely that large areas of soil would be exposed during construction than under the Preferred Alternative. While this would result in greater effects than under the Preferred Alternative due to the greater amount of acres cleared and developed per year, mitigation measures would reduce the potential for particulate matter to be released into the air. Indirect effects from local vehicle traffic, commuter traffic, and OHV use would be minor. Air quality modeling indicates that these effects would be less than significant, although effects would be slightly greater than under the Preferred Alternative due to a larger population in the area.
Transportation and Circulation	No effects to transportation and circulation would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, then new roads would be constructed by individual landowners. A lack of coordination could result in localized adverse effects on circulation. However, a traffic plan in the adjacent development in Clark County would likely effectively manage any adverse effects to transportation due to the likely limited development in the project area from a lack of infrastructure.	CSI's commitment to maintaining a LOS of C on all internal roads would ensure that roadway capacity would be designed commensurate to the land use it serves. The Preferred Alternative does not currently include any measures to minimize construction-related traffic impacts to off-site traffic. However, the off-site traffic improvements triggered by thresholds of actual traffic monitoring results for their implementation may potentially mitigate short-term construction related traffic effects. The phasing and limit on acres developed per year would additionally moderate the amount of construction related traffic added to off-site highways. The indirect effects of the Preferred Alternative would be the addition of traffic trips to offsite highways. Combined with the development agreement between Lincoln County and CSI, measures have been designed to maintain the off-site highways to operate at a LOS of C on U.S. Highway 93 and LOS of D on SR 168. The western perimeter of the Development Area follows U.S. Highway 93 and the southern perimeter follows State Route 168; NDOT will fence these roadways, using fees from CSI MSHCP.	Direct effects would be similar to those described for the Preferred Alternative, although without phasing, higher temporary adverse effects to circulation could occur. The indirect effects of Alternative 1 would be the addition of traffic trips to offsite highways. Alternative 1 includes off-site traffic improvements triggered by thresholds of actual traffic monitoring results. Combined with the development agreement between Lincoln County and CSI, these measures are designed to maintain the off-site highways to operate at a LOS of C on U.S. Highway 93 and LOS of D on SR 168.
Noise	No effects to noise would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, short-term and long-term noise levels would increase because of construction activities and human residence in the area. These noise levels would likely be similar to, but of a smaller intensity, than noise effects described in more detail in the Preferred Alternative, as it would be likely that less development would occur due to a lack of infrastructure.	Development of the CSI lands would result in long-term increased noise levels in these areas equivalent to quiet residential areas. Short-term increases in noise levels would result from the use of heavy equipment in construction efforts on the CSI lands. No noise regulations are included in the Lincoln County Code for Lincoln County, Nevada. Workers employed for construction activities associated with the alteration of the washes would be exposed to increased noise levels during construction; however, the exposure would be short-term and temporary.	Direct effects of Alternative 1 would be expected to be similar to those of the Preferred Alternative, as the same types of activities would occur. However, the short-term potential for noise creation could be greater if construction activities would occur all at once. In addition, long-term noise levels would be higher from increased residents.
Land Use, Planning, and Zoning	No effects would occur because of this alternative.	No effects would occur because of this alternative.	No direct effects would occur because of this alternative.
Recreation Resources	No effects to recreation resources would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, future development of individual parcels may or may not add recreational parks and facilities to the area. If recreational parks and facilities were developed, this could result in direct beneficial effects on recreational resources, through adding recreational opportunities. If such facilities were not developed, adverse indirect effects of increased demand on outlying BLM lands could occur, although such facilities would be less than for the other alternatives, due to the expected lower level of development and residents.	New recreational resources would provide for the varied interests of the future residents of the CSI planned community and would result in long-term benefits. Off-site impacts could be expected to increase due to recreation use by the increased population from the development on adjacent public lands and resources.	Direct effects would be less beneficial than the Preferred Alternative, as trails would not be developed in a Coyote Springs Investment Conservation Lands on Lincoln County lands. Off-site impacts could be expected to increase due to recreation use by the increased population from the development on adjacent public lands and resources. This effect may be more pronounced then in the Preferred Alternative due to a larger population in the area.
Public Services and Utilities	No effects to public services and utilities would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, this may result in the lack of adequate public services provided in the area.	Buildings and utilities would be constructed in compliance with all regulations and would not burden any existing public service or utility; therefore, no adverse effects would occur.	The public services and utilities that would occur under Alternate 1 would be constructed in compliance with all regulations and would not burden any existing public service or utility; therefore, no adverse effects would occur.
Socioeconomics	No effects to socioeconomics would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, the effects on population, socioeconomic conditions, and economic activity are unknown, as the size and timing of the development is unknown. It is unlikely though that the development would proceed as quickly and on as large a scale as the CSI Development, so it is not expected that the region would experience as high a rate of growth in terms of population and economic activity as under the action alternatives.	The economic benefits of the project are projected to increase from 80 jobs and $4.0 million in labor income on average per year during the first five years of project development, to an average of over 32,300 jobs and $1.4 billion in labor income annually during the last five years of project development. After project development is completed, average annual economic benefits to Lincoln County are estimated to continue at approximately 32,300 jobs and $1.4 billion in labor income. After project completion, estimated annual surpluses are $59 million for the General Fund, $16 million for the Library Fund, and $17 million for the Capital Projects Fund. Additionally, annual sales tax revenues to Lincoln County after project completion are estimated at $34 million. Due to the distance of communities from the proposed CSI development, no direct effects to communities and social groups would be expected from implementing the Preferred Alternative.	The economic benefits of the project are projected to increase from 70 jobs and $3.4 million in labor income on average per year during the first five years of project development, to a peak of 33,100 jobs and $1.7 billion in labor income annually during project development years 26 to 30. After project development is completed, the average annual economic benefits to Lincoln County are estimated to continue at approximately 32,300 jobs and $1.4 billion in labor income. After project completion, estimated annual surpluses are $27 million for the General Fund, $22 million for the Library Fund, and $23 million for the Capital Projects Fund. Additionally, annual sales tax revenues to Lincoln County following project completion are estimated at $40 million. Due to the distance of communities from the proposed CSI development, no direct effects to communities and social groups would be expected from implementing the Preferred Alternative.

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Impact Topic	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Environmental Justice	No effects to environmental justice would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development, environmental justice effects would largely depend upon the effect of the development on environmental quality, the affordability of housing, the creation of jobs, and the provision of public services. As these factors are not known, it is not possible to predict whether potential adverse impacts would disproportionately affect low income or minority communities.	While there are potential benefits to disadvantaged groups associated with the project, such as an increase in the availability of affordable housing, the project also has the potential to negatively affect low-income communities in Lincoln County if housing costs rise due to the CSI Development. However, this would be unlikely given the distance of the proposed CSI Development from other communities in Lincoln County. Additionally, the Moapa Band of Paiute Indians and potentially other tribes could be adversely affected by the proposed CSI Development if their cultural resources are disturbed, but consultation with tribes prior to project implementation would minimize any potential adverse effects.	Compared to the Preferred Alternative, Alternative 1 would increase the environmental justice considerations related to implementation of the proposed CSI Development. Since there would be an additional 11,000 housing units in the development as compared to the Preferred Alternative, any effects on the housing market, transportation, air quality, or integrity of cultural resources would likely be magnified.
Hazardous Materials	No effects to hazardous materials would occur under the No Action Alternative. If private CSI lands were sold to individual landowners for development,, then compliance with hazardous materials regulations would be required. As a result, no adverse effects from the use of hazardous materials would be expected.	Compliance with state and federal regulations would control the release of hazardous materials, hazardous waste and regulated substance into WOUS, and would reduce the potential for impacts from these hazardous materials to less than significant levels.	Compliance with state and federal regulations would control the release of hazardous materials, hazardous waste and regulated substance into WOUS, and would reduce the potential for impacts from these hazardous materials to less than significant levels.

SECTION 1

Introduction

Section 1: Introduction

This Environmental Impact Statement (EIS) evaluates the impacts of implementing the Coyote Springs Investment LLC's (CSI) Multiple-Species Habitat Conservation Plan (MSHCP); the U.S. Fish and Wildlife Service (USFWS) issuing an Endangered Species Act (ESA) Section 10(a)(1)(B) incidental take permit (incidental take permit) based upon this plan; the U.S. Army Corps of Engineers (Corps) issuing a Clean Water Act (CWA) Section 404 permit for affected waters of the United States (WOUS); and the Bureau of Land Management (BLM) reconfiguring the CSI private and BLM leased lands; and BLM managing the leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988 and the CSI MSHCP. In addition, the EIS analyzes the construction of detention basins for the CSI Development in the BLM utility corridor west of U.S. Highway 93 in Lincoln County.

The MSHCP, a component of the Preferred Alternative in this EIS, is intended to avoid, minimize, and mitigate the incidental take of Covered Species (i.e., those species covered, or addressed, under the MSHCP) from the implementation of the Covered Activities to the maximum extent practicable. The MSHCP also is intended to contribute to the recovery of species listed as threatened or endangered under the ESA of 1973, as amended, and reduce the likelihood of future listing of unlisted species covered by the associated incidental take permit. Measures to avoid, minimize, and mitigate unavoidable effects to WOUS are also a component of the Preferred Alternative. The MSHCP would not address the construction of detention basins for the CSI Development in the BLM corridor west of U.S. Highway 93 in Lincoln County; instead, the detention basins would be subject to separate Section 7 consultation.

Under the Preferred Alternative, the CSI MSHCP would be implemented, the USFWS would issue an incidental take permit, the Corps would issue a Section 404 permit, and BLM would reconfigure the land holdings and manage the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Authorization Act of 1988 and the CSI MSHCP. BLM would also issue a right-of-way for detention basins in the BLM utility corridor west of U.S. Highway 93 in Lincoln County. The Preferred Alternative would allow CSI to develop a new town in southern Lincoln County, Nevada to address a need for housing and economic opportunity. This town, consisting of a master planned community, would include residential, commercial, and industrial land uses, and several environmental conservation features to address the presence of sensitive biological resources. With 98 percent of Lincoln County's lands in federal ownership, little private land has historically been available for development, and as a result, the county's economy has been constrained. Furthermore, with a steady increase in population in neighboring Clark County, developable land in Clark County is becoming unavailable, and it is anticipated that the population will spread into Lincoln County. The proposed project would support planned economic growth in Lincoln County and would provide residential dwelling units to meet the housing needs of the growing southern Nevada area. Commercial development components of the proposed town, as well as an increased tax base, would support economic growth in Lincoln County.

Land currently owned and leased by CSI considered in this EIS consists of approximately 7,548 acres of land leased from the BLM in Lincoln County, 6,219 acres of land leased from the BLM, and approximately 21,454 acres of privately-owned land in Lincoln County (Figure 1-1). Activities considered in this EIS would occur on these lands, as well as on 244 acres of the 0.5-mile-wide utility corridor (BLM utility corridor) west of U.S. Highway 93 in Lincoln County.

Components of the proposed planned town include: 1) community development and construction activities, 2) recreational facilities and open space, 3) utility infrastructure, 4) water supply infrastructure and management, 5) flood control structures development and maintenance including stormwater management, and 6) resource management features.

Under the Preferred Alternative, the planned town would affect critical habitat for the desert tortoise (*Gopherus agassizii*) and may affect habitat for other species that are listed as threatened or endangered under the ESA. WOUS would also be affected by constructing this planned community. To comply with Section 10(a)(1)(B) of the ESA and to obtain a permit for incidental take of listed species because of CSI's activities, CSI has prepared a MSHCP. The CSI MSHCP's goal is to achieve a balance between 1) long-term

conservation and recovery of WOUS and native species of plants and animals present on CSI lands; and 2) the orderly and beneficial use of private land in order to promote the economy, health, and well-being of the future population in the planned town on CSI lands within Lincoln County. CSI has concurrently prepared a Section 404 permit application for submission to the Corps (Appendix P).

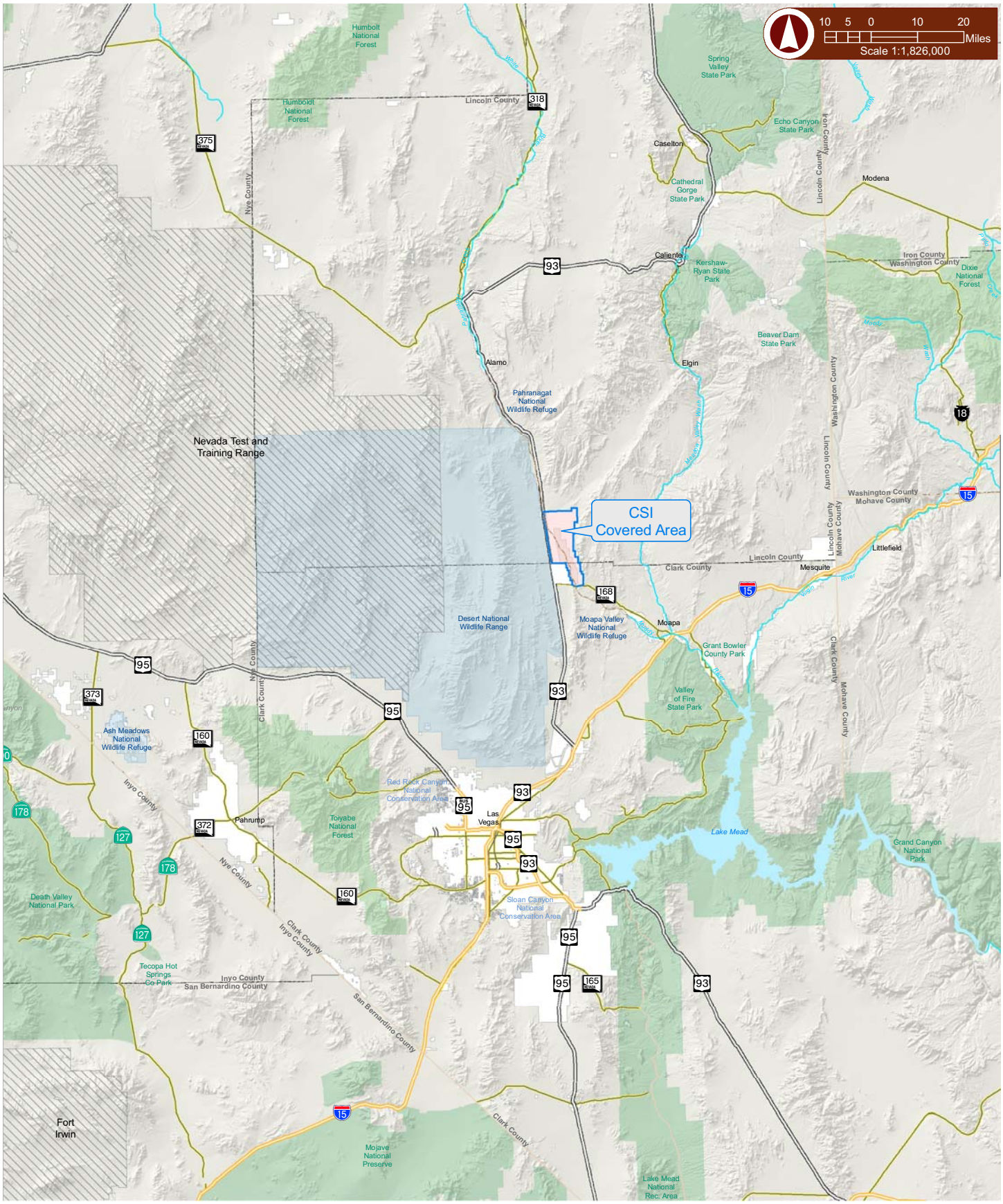
Under the National Environmental Policy Act of 1969 (NEPA), any federal action, including granting a federal permit, approval or permitting of an action occurring on federal lands, or an action involving federal funding, must analyze the environmental effects occurring as a result of implementing the action. Issuance of an incidental take permit under the ESA by the USFWS and a Section 404 permit under the CWA by the Corps are considered major federal actions and require the preparation of an EIS prior to approval. Because BLM actions are necessary to implement the CSI MSHCP, those actions (reconfiguration of the land holdings and management of the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP) are also addressed in the EIS. In addition, detention basins are required for addressing flood control associated with the CSI Development and would be constructed within the BLM utility corridor. The EIS serves as the NEPA compliance document for the USFWS, the Corps, and the BLM in their analysis of the proposed CSI Development and two other alternatives, including a No Action Alternative. This process will also involve compliance with other applicable federal laws and regulations, including Public Law 100-275, or the Nevada-Florida Land Exchange Authorization Act of 1988; Section 106 of the National Historic Preservation Act; Section 7 of the ESA; and Section 401 of the CWA. Refer to Section 1.5: Regulatory Framework for further details on these laws and regulations.

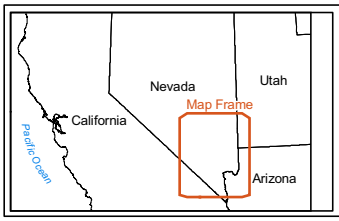
1.1 BACKGROUND INFORMATION

1.1.1 Project History

Prior to 1988, the lands currently owned by CSI were federal lands administered by the BLM. In 1988, Congress enacted Public Law 100-275, or the Nevada-Florida Land Exchange Authorization Act of 1988. This act authorized the exchange of approximately 29,055 acres of BLM-administered lands in Coyote Spring Valley, Clark and Lincoln counties, Nevada, together with approximately 10,040 acres in Mineral County, Nevada (these lands are not part of CSI's lands) for approximately 5,000 acres of private land in the Florida Everglades owned by Aerojet-General Corporation (Aerojet). The purpose of the land trade was to provide habitat protection for environmentally sensitive areas needed for recovery of ESA-protected species in Florida. The United States did not impose any use restrictions on the fee lands when conveyed to Aerojet. The Nevada-Florida Land Exchange Authorization Act of 1988 also entitled Aerojet to lease approximately 13,767 acres of BLM-administered land in Coyote Spring Valley for 99 years, with an automatic 99-year lease renewal term unless terminated by the lessee. Aerojet initially intended to use approximately 2,760 acres of the conveyed fee lands for the construction of rocket manufacturing, assembly, and testing facilities. The remaining lease lands were to remain substantially undeveloped and serve as a conservation area and buffer for the rocket facilities. Under the original configuration, the lease land was an island surrounded by CSI private land (Figure 1-2). This configuration was designed to meet the needs of the Aerojet facilities. Aerojet never built the facilities intended for this land, and in 1998, the fee lands changed ownership. In accordance with the Nevada-Florida Land Exchange Authorization Act of 1988, the Secretary of the Interior approved the assignment of the lease and all its rights from Aerojet to Harrich Investments LLC in 1996 and then again to CSI in 1998. Prior to the lease assignment, CSI informed the Secretary of Interior of the plan to build a community at the site.

Included in the Nevada-Florida Land Exchange Authorization Act of 1988 was a provision for a federally reserved electrical transmission line right-of-way corridor (Corridor) on 10,735 acres of the fee lands in southern Lincoln and northern Clark counties. The Lincoln County Conservation, Recreation, and Development Act of 2004 (Public Law 108-424) (LCCRDA) authorized and directed BLM to relinquish the reserved transmission corridor upon CSI's payment of the fair market value (FMV), and to relocate the corridor to an area adjacent to and west of U.S. Highway 93. Relinquishment of the transmission corridor in Clark County has been completed; however, relinquishment of that portion of the transmission corridor encompassing CSI's Lincoln County lands is pending. This action expanded development opportunities on CSI existing fee lands.



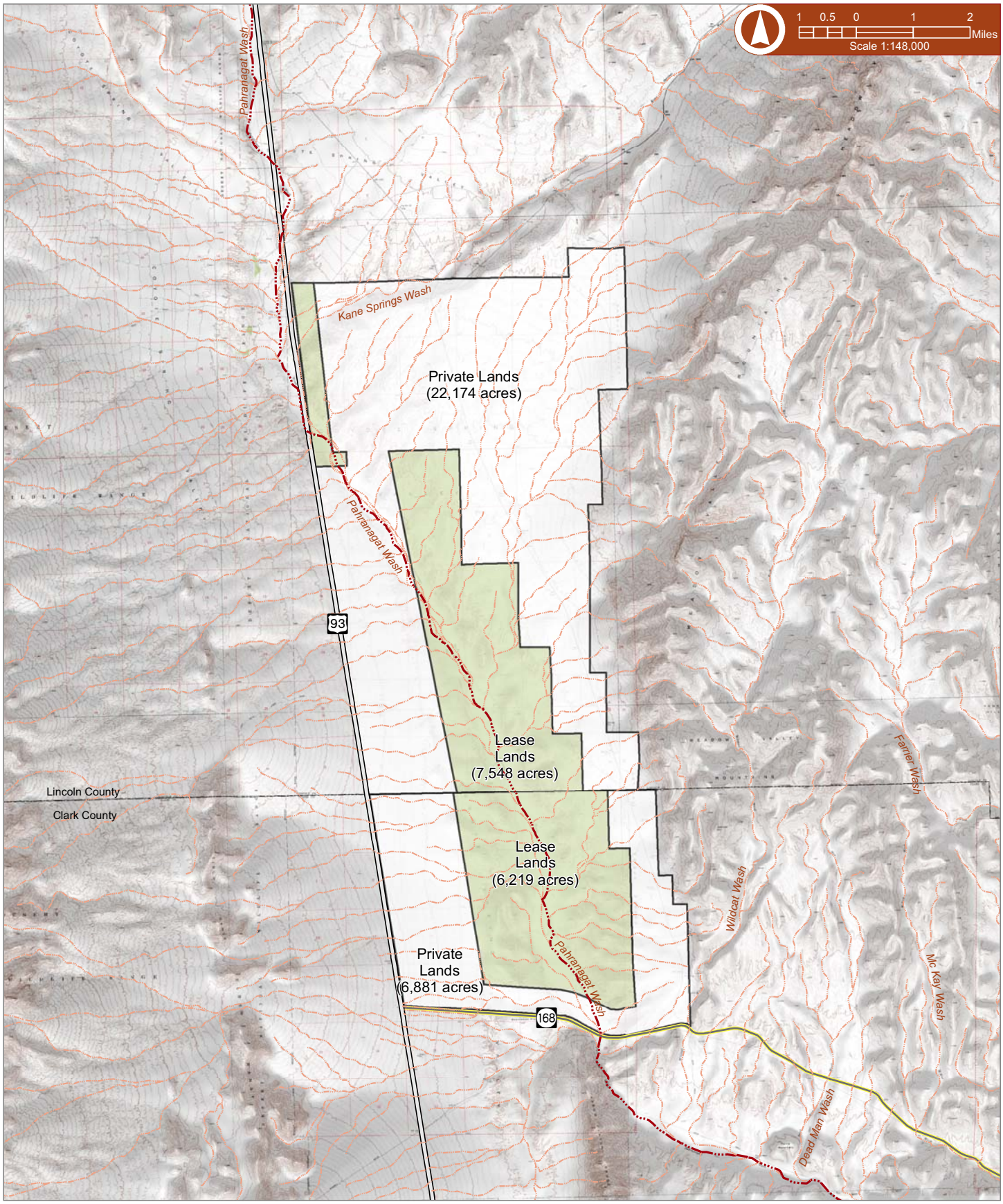


Coyote Springs Covered Area
Private Land
County Boundary
Interstate
Highway
State Route
Stream
Ephemeral Channel
State Boundary
Wildlife Refuge
Military Installation
Park or Forest

CSI Planned Development Project Final EIS

Figure 1-1
Location of Coyote Springs Investment Property in Southern Nevada

ENTRIX



Land Status
- Private Lands
- Lease Lands
- Highway
- State Route
- Ephemeral Channel
- Desert Dry Wash

CSI Planned Development Project Final EIS

Figure 1-2
Coyote Springs Investment
Private and Leased Lands - Original Aerojet Land Configuration

ENTRIX

In 2005, CSI and BLM, in consultation with the USFWS, reconfigured the private and lease lands in Clark County (ENTRIX et al. 2005). The purpose of this reconfiguration was to: 1) allow for the establishment of the Coyote Springs Investment Conservation Lands (CSICL) in Clark County, and 2) maintain connectivity between the lease lands and the adjacent BLM lands to the east, which have been designated as Areas of Critical Environmental Concern (ACECs) (Figure 1-3). These actions were consistent with the reasonable and prudent measures stipulated in the Biological Opinion (BO, File No. 1-5-05-FW-536-Tier 01) for issuance of a Section 404 permit by the Corps to CSI in conjunction with development activities on private land in Clark County (see Section 1.2.3). This reconfiguration is currently in litigation.

Additionally, CSI has conveyed approximately 720 acres of property in Lincoln County to The Conservation Fund (TCF), a Maryland non-profit corporation. This is a separate action from the project addressed in this EIS. The transfer of 720 acres leaves approximately 21,454 acres of CSI private land available for development in Lincoln County.

1.1.2 Site Location

CSI private land is located in southern Lincoln County and extends nine miles north from the Lincoln County-Clark County line. Currently, the CSI private and lease lands in Lincoln County are located in portions of Township 11 South, Range 63 East and Township 12 South, Range 63 East (Mount Diablo Meridian [MDM]). The lease lands in Clark County are located in Township 13 South, Range 63 East and in Township 13 South, Range 64 East (MDM). The land ownership surrounding the project area is primarily public land managed by the BLM and the USFWS.

To minimize impacts to the desert tortoise, the layout of the leased and private lands would be reconfigured from the existing configuration (Figure 1-4). Under the existing configuration, CSI lease lands are an island within the CSI private land. The reconfigured layout would consolidate the private land to the west and the lease land to the east side of the property.

Species occurring within an area outside of the CSI lands, including but not limited to the Muddy Springs area of the Muddy River and various tributaries of the Muddy River, may be affected indirectly from development activities on CSI lands in Lincoln County and will be considered in the analyses of effects to Covered Species in this EIS. The Muddy River area is not part of the project area. The Muddy River is located approximately 14 miles downstream from the project area and approximately 17 miles from the Development Area.

The project area analyzed in this EIS includes the environment affected by Covered Activities and conservation measures included in the action alternatives. The project area under the Preferred Alternative includes the environment affected by Covered Activities and conservation measures. It includes lands owned by CSI in Lincoln County and CSI's lease lands in Coyote Spring Valley in both Lincoln and Clark counties. The subject land leased and owned by CSI is located in portions of Coyote Spring Valley (Figure 1-1). It consists of approximately 13,767 acres of land to be included in the CSICL (approximately 7,548 acres in Lincoln County and 6,219 acres in Clark County leased from the BLM), 21,454 acres of developable private land in Lincoln County, and 3,331 acres of the BLM utility corridor adjacent to the Development Area, west of U.S. Highway 93. The total acreage within the project area is 38,552 acres. Under the Preferred Alternative, only the developable private land and lands to be included in the CSICL would be addressed in the CSI MSHCP.

1.1.3 Consultation and Regulatory Compliance History

1.1.3.1 CSI Memorandum of Agreement and MSHCP

CSI, USFWS, and BLM signed a Memorandum of Agreement (MOA) on March 31, 2001, to establish a MSHCP under Section 10(a)(1)(B) of the ESA (Appendix A). The CSI MOA explains the ownership history of the CSI lands and provides guidance for development of a mutually agreeable MSHCP and land adjustments as appropriate to benefit the desert tortoise, with the subsequent issuance of an incidental take permit. In signing the MOA, CSI agreed to develop a MSHCP for the desert tortoise and other Covered Species for activities occurring on CSI lands within Lincoln County. Since the MOA was signed, CSI, USFWS, and BLM

have been engaged in an iterative, cooperative process to develop an EIS, MSHCP, Implementation Agreement, and ESA Section 7 Biological Assessment (BA).

The CSI MSHCP has been prepared in accordance with Section 10(a)(2)(A) of the ESA as part of the application for the incidental take[3] permit of Covered Species on CSI private lands in Lincoln County. Under the CSI MOA, it was agreed that CSI development on private land in Clark County would be covered by a 1995 and 2000 incidental take permit issued by the USFWS to Clark County, thus not subject to the CSI MSHCP. Since 2001, when this initial NOI was issued and public meetings were held, CSI's privately owned land in Clark County was excluded from the Development Area covered in the CSI MSHCP.

The CSI MOA outlined the establishment of an Executive Committee (EC), a Technical Steering Committee (TSC) and a Biological Advisory Subcommittee (BAS). The EC is comprised of one representative from each of the following: USFWS, BLM, and CSI. The TSC included representatives from the USFWS, Nevada Department of Wildlife (NDOW), Nevada Department of Transportation (NDOT), BLM, the Board of Lincoln County Commissioners, the Clark County Department of Comprehensive Planning, the Southern Nevada Water Authority (SNWA), U.S. Geological Survey (USGS) Water and Biological Resources Divisions, the Moapa Town Advisory board, the Sierra Club, and the Audubon Society. The BAS was initiated by the USFWS and CSI to research and address concerns and issues related to the desert tortoise and other sensitive species within CSI lands. These committees provided significant guidance during the early development phase of the CSI MSHCP.

In 2002, the State Engineer issued Order 1169 (Appendix B), which held in abeyance carbonate-rock aquifer system groundwater applications pending or to be filed in Coyote Spring Valley and other specified hydrographic basins, and required further study of the effects of groundwater production from the Coyote Spring Valley Basin. CSI is currently working with SNWA, Las Vegas Valley Water District (LVVWD), Moapa Valley Water District (MVWD), and Nevada Power Company, under the direction of the State Engineer, to conduct pump testing and monitoring activity within the basin and surrounding basins in accordance with State Engineer Order 1169.

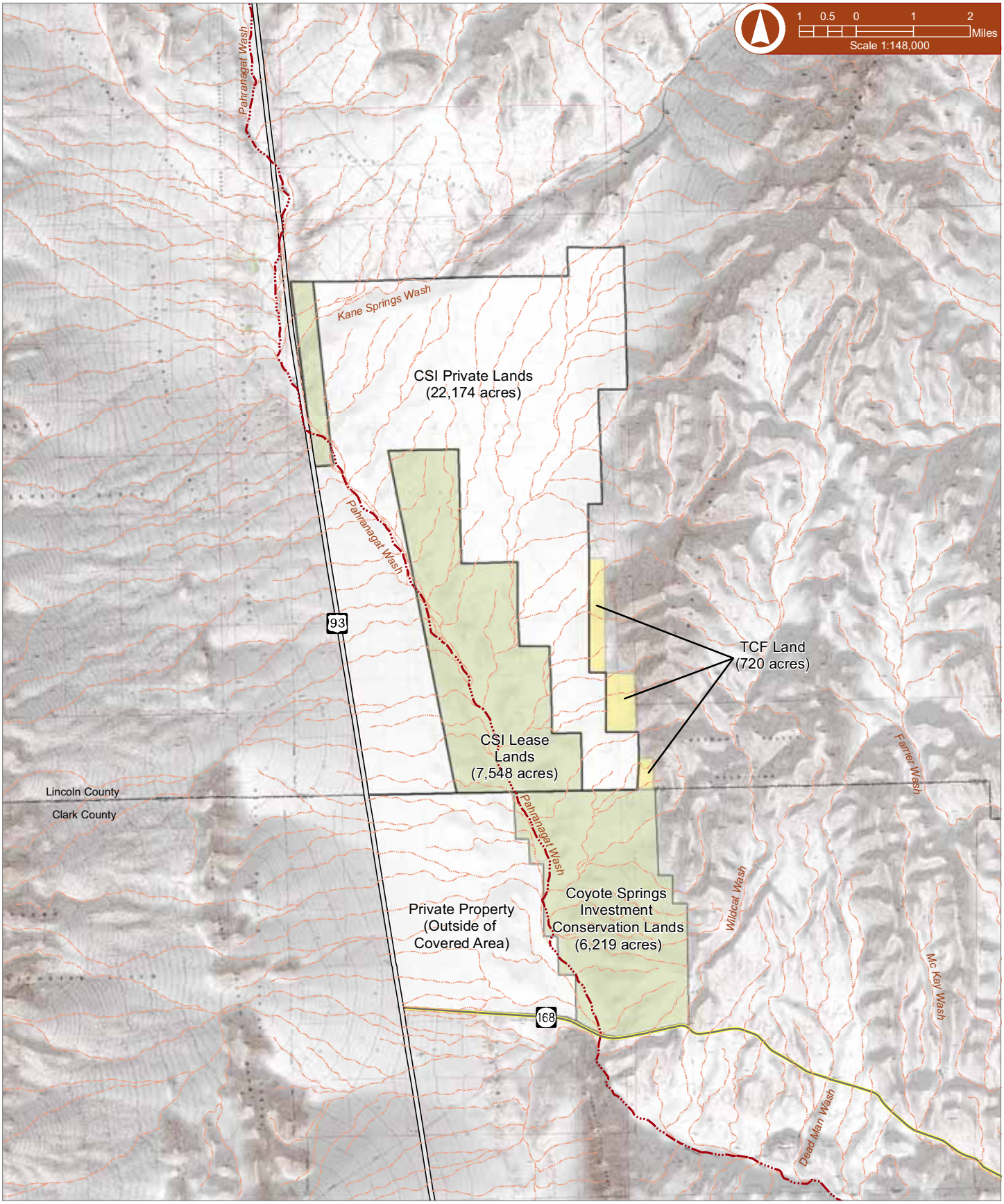
CSI also agreed to develop a Water Monitoring Plan under the CSI MOA. The Regional Water Monitoring Plan was approved by the Nevada State Engineer on March 14, 2005, and is being implemented under the direction of the Nevada State Engineer.

In May 2005, based upon a series of meetings between USFWS and CSI, an informal consultation letter was issued by USFWS outlining the framework for development of the CSI MSHCP (Appendix C). Continuing consultations with USFWS during development of the CSI MSHCP resulted in modifications to some of the concepts set forth in 2005. Those modifications are reflected in this document.

1.1.3.2 Muddy River Memorandum of Agreement and Moapa Dace Biological Opinion

On April 20, 2006, the SNWA, USFWS, CSI, the Moapa Band of Paiutes (Tribe), and the MVWD signed the Muddy River MOA (Appendix D). The Muddy River MOA established conservation measures and monitoring and management criteria to be implemented concurrently with development of water projects within certain groundwater basins, including the Coyote Spring Valley and the California Wash hydrographic basins. The Muddy River MOA outlines specific conservation actions that each party would complete to minimize potential impacts to the federally endangered Moapa dace (*Moapa coriacea*) if water levels decline in the Muddy River system as a result of cumulative withdrawal of 16,100 acre-feet per year (afy) from the Regional Carbonate Aquifer in Coyote Spring Valley and California Wash Basins. The parties agreed to establish a Muddy River Recovery Implementation Program (MRRIP) as a conservation measure for the protection and recovery of Moapa dace and its habitat. CSI agreed to dedicate a portion of its current and future water rights for the survival and recovery of the Moapa dace and agreed to provide funding for the restoration of Moapa dace habitat. The parties to the MOA have started developing the MRRIP and anticipate completion of the MRRIP in 2008.

[3] Incidental take is defined as take of listed fish or wildlife species that results from, but is not the purpose of carrying out an otherwise lawful activity conducted by a federal agency or applicant.



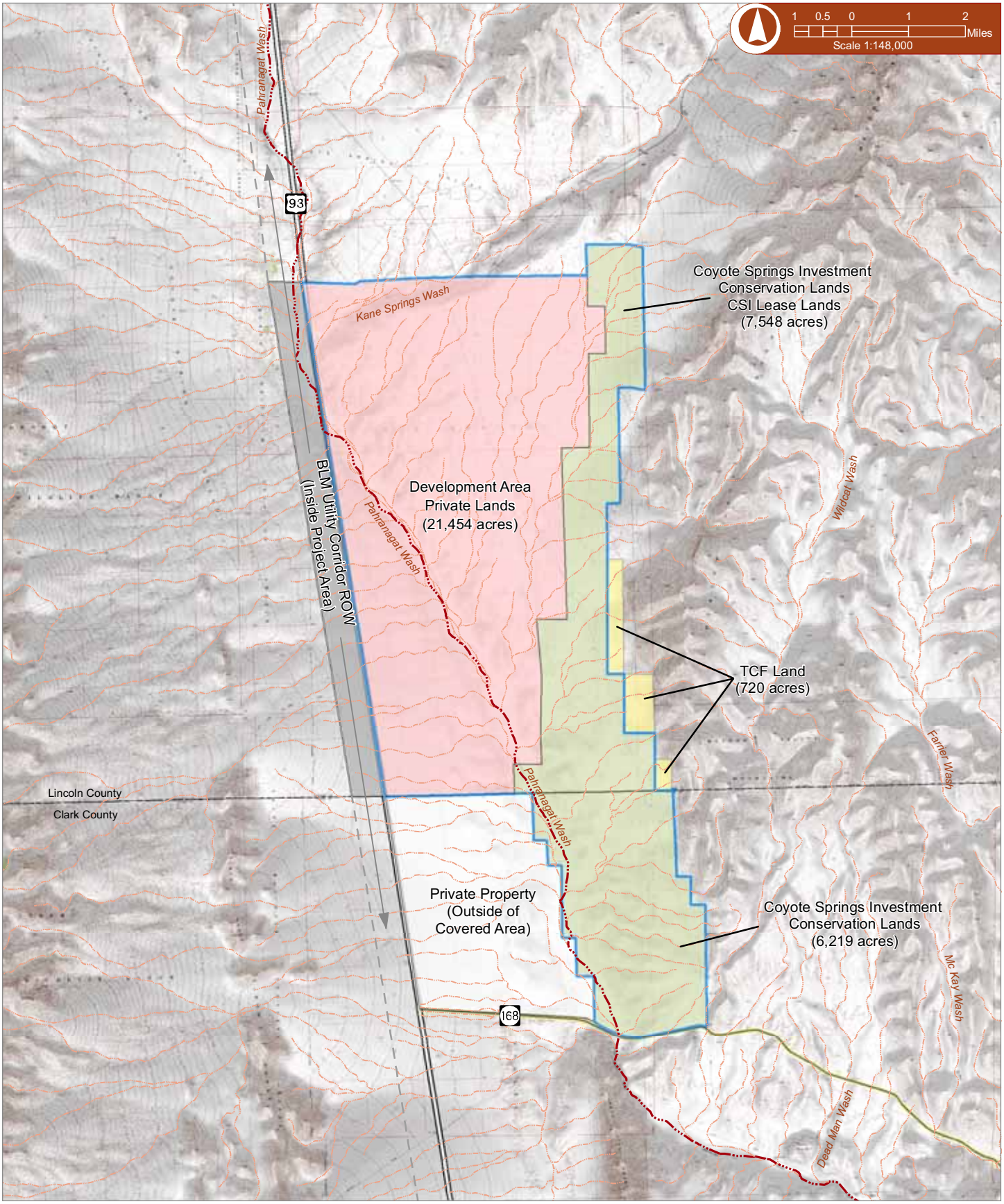
Land Status

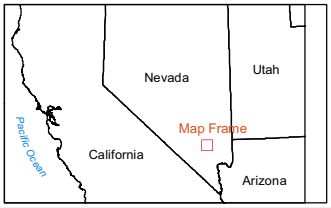
- Private Lands
- Conservation Lands Area or Lease Lands
- The Conservation Fund Parcels
- Highway
- State Route
- Ephemeral Channel
- Desert Dry Wash

CSI Planned Development Project Final EIS

Figure 1-3
Coyote Springs Investment Private and Leased Lands
Exsting Land Configuration

ENTRIX





Land Status

- CSI Covered Area
- CSI Development Area
- Conservation Lands
- Highway
- State Route
- The Conservation Fund Parcels
- BLM Utility Corridor
- Private Property (in Clark County)
- Ephemeral Channel
- Desert Dry Wash

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Figure 1-4
Coyote Springs Investment
Private and Leased Lands Proposed Land
Configuration under the Preferred Alternative

ENTRIX

The USFWS completed an intra-service, programmatic BO for the proposed Muddy River MOA regarding the groundwater withdrawal and associated conservation measures for the Moapa dace (1-5-05-FW-536, USFWS 2006, Appendix D). ESA consultation for project-specific activities included in the MOA is tiered off the 2006 programmatic BO.

Based on CSI's commitments to the survival and recovery of the Moapa dace and overall conservation of the Muddy River as outlined in the Muddy River MOA (Appendix D), CSI has agreed to dedicate 460 afy for the Moapa dace, an amount equal to 10 percent of CSI's allotted water rights within the Coyote Spring Valley Basin. In addition, CSI agreed to dedicate five percent of all water rights above 4,600 afy that CSI appropriates within the basin or imports into and uses in the Coyote Spring Valley Basin. This dedication of water rights to Moapa dace recovery and Muddy River conservation was established under the Muddy River MOA and will be implemented through the MRRIP for water rights used for development in Clark County, an action separate from the CSI MSHCP and Lincoln County development.

Additional development of water in excess of 16,100 acre-feet per annum (afa) analyzed in the intra-service, programmatic BO would require reinitiation of Section 7 consultation.

1.1.4 Biological Opinion for CSI 404 Permit in Clark County

A record of decision (ROD) for issuance of a Section 404 permit associated with development of private CSI lands in Clark County (Figure 1-1) was issued on May 22, 2006. The issuance of this ROD was based on compliance with NEPA and ESA (ENTRIX et al. 2005), including a BO from the USFWS.

The primary findings and directives of the BO issued by the USFWS (1-5-05-FW-536-Tier 1) included the following:

1.1.4.1 Findings

- The effects of the proposed action and the cumulative effects, as proposed and analyzed, are not likely to jeopardize the continued existence of the desert tortoise and not likely to adversely modify its critical habitat based on the action area falling within the coverage and acreage calculation of the Clark County MSHCP and the Corps intends to minimize the effects of the proposed action on the desert tortoise by requiring the applicant to comply with the terms and conditions of the incidental take permit under the ESA for the Clark County MSHCP and implementation of additional minimization and conservation measures described below.
- The effects associated with the cumulative groundwater withdrawal by multiple parties analyzed in the Muddy River MOA BO, the project-specific effects associated with CSI's proposed action, and the cumulative effects is not likely to jeopardize the continued existence of the endangered Moapa dace based on implementation of the project's conservation actions described below.
- The USFWS concurred with the Corp's determination that the project may affect, but is not likely to adversely affect southwestern willow flycatcher, Yuma clapper rail, and the yellow-billed cuckoo (a candidate species that does not require consultation under Section 7 of the ESA).

1.1.4.2 Conservation Measures

- Coyote Springs Investment Conservation Lands Perpetual Conservation Easement: subject to BLM's consent, setting aside 6,219 acres that permanently protects the Pahranagat Wash incised ephemeral channel (WOUS) and all adjacent WOUS associated with the uplands to the east of Pahranagat Wash incised ephemeral channel, within the project area, from development activities (except for conservation purposes).

CONSERVATION MEASURES SPECIFIC TO THE DESERT TORTOISE

- A $550-per-acre development fee, as required under the Clark County MSHCP.
- CSI has agreed to pay $750,000 to fund research and activities that will further conservation efforts for the desert tortoise in Coyote Spring Valley and Mormon Mesa CHU.

- All lands surveyed and cleared of desert tortoise prior to ground disturbing activities.
- Permanent tortoise exclusion fencing provided on the northern and eastern perimeter of the developed area (the western perimeter of the Development Area follows U.S. Highway 93 and the southern perimeter following State Route 168; NDOT will fence these roadways). The fence on the eastern side of the Development Area is on the western side of Pahranagat Wash incised ephemeral channel and would also assist in minimizing impacts to the wash.
- Research studies will be conducted as directed by a Scientific Advisory Team and may include surveys to evaluate the status of the tortoise within the Mormon Mesa Critical Habitat Unit; assessment of weed control and habitat restoration measures; and establishment of a juvenile tortoise "head starting program."

CONSERVATION MEASURES SPECIFIC TO THE MOAPA DACE

- Participation in the establishment of a RIP and employ the principles of adaptive management to outline and carry out conservation measures necessary to protect and recover the Moapa dace and allow for development and operation of regional water facilities.
- Dedication of an amount equal to 10 percent (460 afy) of the CSI water rights within the Coyote Spring Valley Basin to the survival and recovery of the Moapa dace and its habitat.
- Dedication of an additional 5 percent of any water rights above 4,600 afy that CSI may be entitled to withdraw in the future from Coyote Spring Valley or import into the basin.
- CSI has agreed to provide $50,000 annually for four (4) years to be used for habitat restoration to promote the recovery of the Moapa dace.

1.1.5 Listed Species Potentially Affected by Activities in the CSI MSHCP

A summary of federally listed species with the potential to be affected by the proposed CSI Development in Lincoln County was requested from the USFWS on October 14, 2004, on behalf of CSI. A letter from the USFWS dated January 7, 2005 (File No. 1-5-05-SP-410) listed the following species as those that may occur within the project area:

- Desert tortoise (*Gopherus agassizii*), Mojave population, threatened
- Moapa dace (*Moapa coriacea*), endangered
- Yuma clapper rail (*Rallus longirostris*), endangered
- Southwestern willow flycatcher (*Empidonax traillii extimus*), endangered
- Yellow-billed cuckoo (*Coccyzus americanus*), candidate

Covered Species are those species which coverage under an incidental take permit (ESA Section 10(a)(1)(B) permit) is requested. CSI, in cooperation with the USFWS, BLM, and the TSC (in meetings during 2001-2003), considered 40 species for coverage in the CSI MSHCP. Two additional categories of species are proposed for the CSI MSHCP and Preferred Alternative: Evaluation Species and Watch List Species. Evaluation Species are those for which additional biological information is required to adequately assess the potential effect of Covered Activities and/or assess the benefits of conservation measures. Watch List Species are those for which adequate information is not available to assess population range, current status, or conservation potential or those that are not considered to be at risk during the planning horizon of the MSHCP, which is the period of the incidental take permit requested. Watch List Species are not anticipated to need coverage under the incidental take permit during the 40-year permit length. Of the 40 species assessed, five (5) are designated as Covered Species, eight (8) as Evaluation Species, and twenty-seven (27) as Watch List Species. Covered Species and Evaluation Species are listed in Table 1-1 and further described in Section 4: Affected Environment.

Table 1-1 List of Proposed Covered Species and Evaluation Species in the Coyote Springs Investment Multiple-Species Habitat Conservation Plan

Common Name	Scientific Name	Federal Protection	BLM Status	State Protection
COVERED SPECIES				
Potential to occur within the project area				
Desert tortoise	*Gopherus agassizii*	FT	Yes	Yes
Banded Gila monster	*Heloderma suspectum cinctum*	XC2	Yes	Yes
Western burrowing owl	*Athene cunicularia hypugaea*	XC2	Yes	Yes
Occur outside of the project area and may be indirectly affected by Covered Activities				
Moapa dace	*Moapa coriacea*	FE	Yes	Yes
Virgin River chub	*Gila seminuda*	FE, Virgin River population only	Yes	Yes
EVALUATION SPECIES				
Potential to occur within the project area				
Three-corner milkvetch	*Astragalus geyeri* var. *triquestrus*	XC2	Yes	CE
Sticky buckwheat	*Eriogonum viscidulum*	XC2	Yes	CE
Las Vegas buckwheat	*Eriogonum corymbosum* var. *nilesii*	FC	Yes	
Occur outside of the project area and may be indirectly affected by Covered Activities				
Moapa White River springfish	*Crenichthys baileyi moapae*			Yes
Moapa speckled dace	*Rhinichthys osculus moapae*		Yes	Yes
Relict leopard frog	*Rana onca*	FC		Yes
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE	Yes	Yes
Yuma clapper rail	*Rallus longirostris yumanensis*	FE		Yes

The species status under the federal ESA is based on five listing factors. Based upon the level of threat (five listing factors), the species status may warrant protection under the ESA. The ESA listing status was obtained from the NNHP Rare Animal List (March 18, 2004) and the Rare Plant and Lichen List (April 1, 2005). The ESA status was then cross-referenced with the USFWS Threatened and Endangered Species System (http://ecos.fws.gov). Codes that were used to delineate the level of protection are defined as:

FE = Federal Endangered; FT = Federal Threatened; FC = Federal Candidate; and XC2 = Former Category 2 Candidate Species, now Species of Concern.

Some species warrant additional protection by the State of Nevada. The Nevada status was obtained from the NNHP Rare Animal List (March 18, 2004) and the Rare Plant and Lichen List (April 1, 2005). The Nevada status was then cross-referenced with a NatureServe (2006) species comprehensive report (available from http://www.natureserve.org/explorer/). Nevada faunal species either warrant protection or not under Nevada Revised Statute (NRS) 501. Flora species are designated per: [NRS ch. 527]

CE = Critically Endangered, CY = Protected as cactus, yucca, or Christmas tree, P = Proposed for state listing.

1.2 ISSUES

Internal scoping from TSC meetings and public scoping from public workshops and comments resulted in identification of a number of issues related to the CSI Development.

1.2.1 Issues Retained for Further Analysis

Based on input from the public, government agencies, and the TSC, several major issues have been identified for further analysis in this EIS:

- **Biological Resources.** Activities described in the alternatives would result in impacts to special-status species, including desert tortoise, banded Gila monster, and western burrowing owl, and may result in impacts to Virgin River chub and Moapa dace. Thus, incidental take of desert tortoise would occur. Impacts to vegetation and other wildlife could also occur from development activities.
- **Waters of the United States.** Although no wetlands have been identified, other WOUS in the form of desert dry washes have been found in the project area. Impacts to desert dry washes and floodplains from components of the alternatives such as flood control management activities could also occur.

- **Hydrology and Water Quality.** The alternatives could result in impacts to water quality and quantity from large-scale water withdrawals, dredging, and watercourse alignments. Natural or depletable resource requirements and resource potential (43 FR 55994 Section 1502.16) will be analyzed under the hydrology and water quality issue.

A Preferred Alternative Needs Assessment prepared for the CSI Development in Lincoln County identified a maximum build out scenario of 70,000-afa water demand. However, the long-term demand for golf courses, parks and common area landscape irrigation is not included in this 70,000-afa estimate[4]. Under the Preferred Alternative, the planned development has been designed and constructed to allow the use of treated effluent for irrigation, once a sufficient supply of treated effluent is available to serve each respective area. Approximately 50 percent (35,000 afa at full buildout) of the water used to serve the development would be reclaimed. Water supply development will not be included as a component of this alternative, although timing and extent of the CSI Development will depend upon the availability of water.

Water rights and associated groundwater development are not included as Covered Activities within the CSI MSHCP or covered in this EIS. Environmental concerns associated with the use and transport of existing and future water rights to the Development Area will be addressed in separate environmental documents, as specific water rights and pipeline routes are determined in the future. Because of the location of CSI lands in Lincoln County, surrounded by federal land on all sides, providing water to the town outside of Coyote Spring Valley basin would involve pipelines that would cross federal lands. Therefore, separate NEPA analyses would need to be conducted for these actions. Because of this, no groundwater development is included in the Preferred Alternative. Effects of groundwater development associated with the planned community are addressed in Section 5.21: Cumulative Effects.

However, production of existing permitted rights within the Coyote Spring Valley Basin from within the Development Area in lieu of the existing production locations is a Covered Activity. The production of these water rights is covered under the Muddy River MOA and associated BO, pursuant to which the parties agreed to relocate their production if warranted.

- **Cultural Resources.** Cultural resources are known to occur on the CSI lands. Impacts from the alternatives could occur.
- **Soils and Geological Resources.** Impacts to soils and geological resources could occur as a result of the alternatives.
- **Ecologically Critical Areas.** Pursuant to 40 CFR 1508.27, agencies must include an analysis of effect to ecologically critical areas if applicable. The CSI lands are located adjacent to two BLM-designated ACECs, established for the further protection of the desert tortoise and its critical habitat. Effects from activities associated with development on CSI lands could affect these ecologically critical areas.
- **Wilderness Areas.** Effects from activities associated with development on CSI lands could affect adjacent and nearby wilderness areas.
- **Visual Resources.** Effects to visual resources could occur from constructing a planned development in a rural area.
- **Air Quality.** Effects to air quality could be affected by development activities considered in the alternatives.
- **Transportation and Circulation.** Development activities could have impacts on transportation and circulation.
- **Noise.** Effects from noise as a result of the alternatives could occur.
- **Land Use, Planning, and Zoning.** Effects on land use, planning, and zoning could occur from developing a planned town.
- **Recreational Resources.** Impacts to recreational resources could result from components in the alternatives.

[4] For calculating water supply demand, 0.71 afa per single family was assumed. This calculation was based upon discussions with the Las Vegas Valley Water District for assessing demand for CSI private lands in Clark County, a separate project. It is assumed that Lincoln County will adopt the same standard. Once a metered history is available, estimates of the water supply demand may be reduced from this initial estimate.

- **Public Services.** Effects to public services could occur from construction of a planned development.
- **Socioeconomics and Environmental Justice.** The alternatives could have economic impacts to Lincoln and Clark counties. Components of the alternatives, including residential development, could affect population and housing in and near Lincoln County, Nevada. The potential for effects to low-income and/or minority populations also exists.
- **Hazardous Materials.** Construction activities under the action alternatives could use flammable hydrocarbons and other potentially hazardous materials. As required by 43 FR 55994 Section 1508.27, alternatives must be compared to their effects on public health and safety; thus, this section will include effects to public health and safety.
- **Other Issues.** The proposed project may also result in issues relating to:
  - development consistency with state and local land use plans,
  - water development and availability,
  - the area of effect analyzed cumulatively (White Pine, Lincoln, and Clark counties), and
  - the effect of the retention basins on the designated utility corridor addressed in the Ely RMP.

The issues described above have been addressed in the alternatives development process, and potential impacts are evaluated in this EIS.

1.2.2 Issues Dismissed from Further Analysis

1.2.2.1 Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to Native American and Alaska Native tribes. No Indian trust resources occur within the project area considered in this EIS (K&LA 2006).

1.2.2.2 Prime and Unique Farmland

Prime and unique farmland is a required element for analysis in EISs (43 FR 55994 Section 1508.27). However, no prime and unique farmland would be removed from agricultural production under the action alternatives of this EIS, as no prime and unique farmland, either historically or currently, occurs on lands proposed for development under the proposed action. For these reasons, prime and unique farmland was not retained for full analysis.

1.2.2.3 Wetlands

According to field surveys conducted in 2005 and 2006, no wetlands are present within the CSI lands (HBG and RCI 2006). Therefore, wetlands were not retained for analysis.

1.2.2.4 Wild and Scenic Rivers

The alternatives being considered would not affect any designated wild and scenic rivers, as referenced in the Wild and Scenic Rivers Act and 40 CFR 1508.27. Therefore, wild and scenic rivers were not retained for analysis.

1.3 OTHER PLANNING EFFORTS

Ongoing planning at the federal, state, and local levels on other issues may affect or guide decisions on how to implement the federal actions described in this document and may serve as NEPA documentation for disclosure of certain aspects of the Covered Activities identified in CSI MSHCP and the action alternatives of

this EIS. Efforts were taken to maintain consistency between alternatives of this EIS and other ongoing planning and resource management efforts, both directly related to this project and other relevant planning efforts within Lincoln and Clark counties. Plans and projects that were considered in the preparation of this EIS are summarized below.

1.3.1 Related Planning Efforts

1.3.1.1 Environmental Assessments - Coyote Springs Project, Clark County, Nevada

A CSI development on private land in Clark County is covered by a 1995 and 2000 incidental take permit issued by the USFWS to Clark County and is not subject to the CSI MSHCP. Therefore, it is not addressed in this EIS. In 2005, an Environmental Assessment was prepared for the CSI development in Clark County Thereafter, a CWA Section 404 permit was issued by the Corps (Corps File No. 200125042) and a BO was issued by the USFWS (File No. 1-5-05-FW-536-Tier 01).

In June 2007, the Corps amended the Section 404 permit for the CSI development to include the new location of potable water reservoir facilities and detention basins on BLM-administered land. In coordination with the Corps and USFWS, through reinitiation of the Section 7 consultation and completion of an EA, BLM approved the CSI and Pardee Homes of Nevada right-of-way application for the construction and operation of potable water reservoir facilities and detention basins in the BLM utility corridor located west of U.S. Highway 93 in Clark County, Nevada. This project has been described in greater detail above in Section 1.1.3: Consultation and Regulatory Compliance History.

1.3.1.2 ESA Compliance of Groundwater Development and Distribution Activities near CSI Lands

Existing local and regional water rights and future local or regional water rights for which ESA consultations have been completed and for which consultation is yet to be completed include the following:

ESA CONSULTATION COMPLETED

- Use of 4,600 afa of Coyote Spring Valley Basin water rights owned by CSI authorized under the Muddy River MOA BO and subsequent project level BO for CSI development in Clark County, Nevada (File No. 1-5-05-FW-536-Tier 01, Cross Reference 1-5-00-FW-575).
- Use of 9,000 afa of Coyote Spring Valley Basin water rights owned by SNWA was authorized under the BO issued January 30, 2006 (File No. 1-5-05-FW-536).
- Permit 18437 (Cert. 5683) – indirectly addressed under the BO issued January 30, 2006 (File No. 1-5-05-FW-536) because it is covered under the Back-up Water Rights Agreement dated April 20, 2006, which is one of the Muddy River Agreements entered into pursuant to the Muddy River MOA. The Muddy River MOA was covered by the BO.
- Use of 2,500 afa of California Wash Basin water rights owned by the Tribe authorized under BO.
- Use of 9,000 afa of groundwater from Coyote Spring Valley in northeastern Clark County, using new and existing facilities for the Coyote Spring Well and Moapa Transmission System Project N-76493. A project-specific BO for the Coyote Spring project was issued on May 9, 2007 (File No. 1-5-05-FW-536-Tier 2).

ESA CONSULTATION TO BE COMPLETED

- Any additional water rights that are appropriated within the Coyote Spring Valley Basin and made available for use by or within the Development Area.
- Kane Springs Water Rights–Lincoln County Water District /Vidler Water Company Right-of-Way LCWD/Vidler ROW Application No. N-79734. Construction and maintenance of wells, pumps, motors, valves, meters, reservoirs, electric power lines, telemetry, pipelines and all related appurtenances as may be authorized under Application No. N-79734. The Final EIS for this project was released by BLM on

February 8, 2008. The BO for this project is currently being developed (File Nos. 84320-2008-F-007 and 84320-2008-I-0216).

- Lake Valley Water Rights – Transmissions facilities will be covered under a Section 7 consultation after a ROW application is or applications are filed with the BLM seeking authorization to connect wells with the SNWA regional pipeline system or another regional system that is proposed for construction within congressionally designated BLM utility corridors.
- Meadow Valley Wash groundwater rights that are proposed for use as mitigation of potential impacts to the Muddy River. These may be covered under a Section 7 consultation depending upon USFWS's acceptance of the water for mitigation purposes and the selected manner of delivery to the Muddy River.
- Clark, Lincoln, and White Pine Counties Groundwater Development Project would convey up to approximately 200,000 afa of groundwater from six hydrographic basins in northern Clark, central Lincoln, and eastern White Pine counties. The BLM is preparing an EIS for the project.
- Transmission of any other water rights acquired or appropriated from the alluvial or regional aquifer and made available for use by or within the Development Area.

1.3.1.3 Environmental Permitting of Activities Related to Utility Infrastructure near CSI Lands

Certain activities that will be implemented within BLM utility corridors are addressed under separate ESA consultations for desert tortoise, Moapa dace, and other ESA-listed species, as described below.

ESA CONSULTATION TO BE COMPLETED

- Construction and maintenance of utilities and related appurtenances within the BLM utility corridors between the Kane Springs area and the Development Area, located within the BLM utility corridors parallel to the Kane Springs Road and U.S. Highway 93, will be covered under a Section 7 consultation.
- Lincoln County Power District (LCPD) 138 kV transmission line project – LCPD proposes to upgrade its existing 69 kV transmission line, located within the BLM utility corridor west of U.S. Highway 93, to 138 kV. This project may serve the CSI Development in addition to other areas in Lincoln County. LCPD also will construct and operate the electric utility facilities for the Kane Springs Valley Groundwater Development Project.
- L&S Power BLM application for one 500 kV-AC line – This project may indirectly serve the CSI Development.
- Nevada Power Company and Sierra Pacific Power Company – Ely Energy Center. One of the 500 kV lines may serve the CSI Development indirectly.
- Natural gas pipeline expansion – Coyote Springs Gas Transmission, LLC has filed a right-of-way application and a Temporary Use Permit (TUP) application with BLM for the construction of a 12-inch-diameter natural gas pipeline within an existing BLM utility corridor, extending from a Kern River Interstate Transmission Line in the vicinity of Apex, Nevada, to the southwestern portion of the CSI Clark County project. The line will be designed for future capacity expansion. This activity will be covered under a separate ESA Section 7 consultation resulting from processing Application N-82066 and TUP Application N-82066-01.

1.3.2 Relevant Planning Efforts Occurring within Lincoln and Clark Counties

1.3.2.1 Lincoln County Land Act (2000)

Congress passed the Lincoln County Land Act (LCLA) on October 13, 2000, in order to allow some of the rapid growth in Mesquite, Clark County, to benefit Lincoln County and help alleviate the disparity between federal and non-federal land. This disparity (98 percent federal, 2 percent non-federal) is one of the largest in

the state of Nevada. Lincoln County is predominantly federally administered land, and under the LCLA, 13,500 acres of federally administered lands would be available for disposal by the BLM by October 1, 2005.

1.3.2.2 Lincoln County Conservation, Recreation, and Development Act (2004)

The LCLA was amended through the LCCRDA (November 30, 2004; Public Law No: 108-424). Through the LCCRDA, the BLM was required to sell the land identified in the LCLA within 75 days after the date of enactment of the LCCRDA. The lands sold on February 9, 2005, for approximately $47 million. The purpose of this act was the same as the LCLA. The revenue generated from the sale of the lands may be used for the following:

- 5 percent for the State of Nevada for use in the general education program of the state;
- 10 percent for Lincoln County for use as determined through normal budgeting procedures; and
- The remainder to be deposited in a special account available as follows:
  - Inventory, evaluation, protection, and management of unique archaeological resources;
  - Development of a MSHCP in Lincoln County;
  - Reimbursement of costs incurred by the BLM in preparing sales under the LCCRDA;
  - Processing public land use authorizations; and
  - Acquisition of environmentally sensitive land.

Under the LCLA, the Secretary of Interior must cooperate with Lincoln County and the City of Mesquite, and must adhere to the Federal Land Policy and Management Act of 1976, as amended (FLPMA) and other applicable laws in the disposal of these lands by a competitive bidding process for FMV, at a minimum.

Development of the disposed lands would be conducted in accordance with a Development Agreement (DA) and Conveyance Agreement (CA) between the developer(s) and Lincoln County. Lincoln County and the developer(s) would be required to enter into a DA within 30 days of the sale. In addition, the developer(s) would be required to prepare and obtain Lincoln County approval of a land use map identifying a general concept for master planning and development of the property.

All purchasers would be required to indicate their intent to comply with Lincoln County zoning ordinances and any master plan for the area developed and approved by Lincoln County in coordination with the City of Mesquite. This means all development on lands lying adjacent to Mesquite will have to comply with the City of Mesquite's Long Range Comprehensive Master Plan, which is currently being developed.

Title III: Utility Corridors of the LCCRDA directs the Secretary of Interior to establish 2,640-foot wide utility corridors on public lands in Lincoln and Clark counties. One of these utility corridors is along State Route 168, between U.S. Highway 93 and Moapa Valley. Under the LCCRDA, the Secretary of Interior must grant nonexclusive rights-of -way to SNWA and Lincoln County for any facility or system necessary for the construction and operation of a water conveyance system within the corridors, subject to compliance with NEPA.

The LCCRDA of 2004 also provided for the relocation of an existing utility corridor from the east to the west side of U.S. Highway 93 between the U.S. Highway 93–State Route 168 junction and the Kane Springs Road-U.S. Highway 93 junction.

1.3.2.3 Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994)

The *Desert Tortoise (Mojave Population) Recovery Plan* (USFWS 1994) delineates reasonable actions believed to be required to recover and/or protect the desert tortoise. Criteria for future downlisting, recovery units, and proposed Desert Wildlife Management Areas (DWMAs) were also identified. The Desert Tortoise Recovery Plan is currently being updated and a public draft of the plan should be available in late 2008.

In 1998, the BLM Las Vegas Field Office Resource Management Plan (RMP) was approved and implemented, incorporating management recommendations set forth in the Desert Tortoise Recovery Plan. The RMP

established four ACECs, affording protection to designated critical tortoise habitat within the Nevada Recovery Units. Two of these ACECs, the Coyote Spring and the Mormon Mesa, are adjacent to the CSI lease lands to the south and east in Clark County.

1.3.2.4 Designation of Critical Habitat for the Mojave Population of Desert Tortoise

On February 8, 1994, the USFWS designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise, which became effective on March 10, 1994, (59 FR 5820). The proposed actions analyzed in this EIS would occur within the 402,500–acre Mormon Mesa Critical Habitat Unit.

1.3.2.5 Clark County Desert Conservation Plan

In 1995, the Clark County Desert Conservation Plan (DCP) was created to minimize, monitor and mitigate the impacts to the desert tortoise on non-federal land in Clark County, Nevada.

1.3.2.6 Clark County MSHCP and EIS

In 2000, Clark County, Nevada and other applicants and participants completed a MSHCP for a series of Covered Activities that would occur in Clark County over the next 30 years. Activities include development, recreation, agriculture, flood control, mineral activities, off-highway vehicle use, solid waste, transportation, utilities, and sewer and water. Seventy-nine species are covered under the Clark County MSHCP with an additional 103 species as evaluation or watch list species. The CSI development in Clark County is covered by the Clark County MSHCP.

1.3.2.7 Approved Caliente Management Framework Plan Amendment and Final EIS for the Management of Desert Tortoise Habitat (BLM 2000)

The Plan Amendment and Final EIS for the Caliente Management Framework Plan implemented management goals and actions for BLM-administered desert tortoise habitat in Lincoln County, Nevada. The Caliente Management Framework Plan outlines how 754,600 acres of public lands administered by the BLM Ely Field Office will be managed to aid in the recovery of the desert tortoise, in compliance with the USFWS *Desert Tortoise Recovery Plan* (USFWS 1994). These goals and actions, some of which are recommended in the Desert Tortoise (Mojave Population) Recovery Plan, will assist the recovery and delisting of the desert tortoise in the Northeastern Mojave Recovery Unit. This amendment was required to comply with the ESA of 1973, which mandates that all federal agencies conserve and recover listed species within their administrative units.

The Caliente Management Framework Plan Amendment for Desert Tortoise Habitat established three ACECs. Two of these ACECs, the Kane Springs and Mormon Mesa, are adjacent to CSI lands to the north and east in Lincoln County (BLM 2000). Casual OHV use will be limited within the ACECs to roads and vehicle trails designated for OHV use. Organized OHV use within the ACEC will be prohibited until further understanding of how these activities affect the desert tortoise and its habitat. Non-consumptive recreational activities that do not disturb desert tortoise habitat is allowed, however, the effects of these recreational activities on desert tortoise habitat will be monitored. Wilderness areas within the ACEC will be managed according to the Interim Management Plan until further notice. Vehicles are limited to roads designated “open.”

1.3.2.8 Ely Proposed Resource Management Plan and Final Environmental Impact Statement (BLM 2007)

The Ely Proposed Resource Management Plan (RMP) provides programmatic direction for management of BLM-administered public lands within the Ely RMP planning area and analyzes the environmental effects resulting from implementing the alternatives addressed in this Proposed RMP/EIS. This plan supersedes the Caliente Management Framework plan, which originally implemented management goals and actions for BLM-administered desert tortoise habitat in Lincoln County, Nevada. The Ely RMP outlines how 11.5 million acres of public lands administered by the BLM Ely Field Office will be managed to aid in the recovery of the desert tortoise, in compliance with the *Desert Tortoise Recovery Plan* (USFWS 1994). The BLM Ely RMP and associated Final EIS were released in November 2007, and the associated Biological Assessment is currently in progress.

The Ely RMP recognizes a management action to "manage leased public lands in the Coyote Springs area in accordance with Public Law 100-275 dated March 31,1988, and the Land Lease Agreement signed July 14, 1988" (BLM 2007).

1.3.2.9 BLM Las Vegas Field Office Programmatic Biological Assessment

The Las Vegas Field Office (LVFO) of the BLM is in the process of completing a programmatic BA for activities that may affect federally listed species on all lands within its jurisdiction. This BA will provide required information for the Section 7 consultation under the ESA.

1.3.2.10 Route Designation in Selected ACECs Located in the Northeast Portion of Clark County Environmental Assessment

The Las Vegas Field Office recently added an alternative to this EA regarding roads and trails in ACECs in northeast Clark County. This alternative would designate all routes that existed prior to 1998 as open, except for specific routes listed in the "commonalities" statement.

1.3.2.11 Virgin River Habitat Conservation and Recovery Program

The City of Mesquite initiated development of the Virgin River Habitat Conservation Plan (VRHCP) in June 2004, with the intent of obtaining an incidental take permit. In April 2005, an agreement was reached between the City of Mesquite, USFWS, and Clark County to expand the scope of the VRHCP by providing an opportunity for ESA compliance associated with activities beyond the discretion of the City of Mesquite as well as implementing recovery actions. This resulted in the proposal to develop the Virgin River Habitat Conservation and Recovery Program (VRHCRP). Guidance and direction for development of the VRHCRP was sought from other cooperating agencies/entities including the SNWA, Virgin Valley Water District, BLM, National Park Service (NPS), and NDOW. The VRHCRP will serve as the primary mechanism for implementing conservation measures associated with aquatic and riparian species in the Virgin River Basin. Additionally, the framework for administration of the VRHCRP, as well as the technical, stakeholder and public involvement processes would be adapted and modified to include the Virgin River Conservation Management Assessment (VRCMA) process. The VRCMA is broader in scope than the VRHCRP. It includes: 1) assessing the status of, including potentially conducting presence/absence surveys, and developing objectives and a monitoring program for approximately 108 additional species; 2) involvement by more entities in plan development decision making processes; 3) coordination with the Clark County MSHCP process; 4) integration of potential recreational and cultural resource issues, and 5) the production of a document structured for a resource conservation assessment based on the Clark County format.

1.3.2.12 Toquop Energy Power Project

Toquop Energy, LLC (a subsidiary of Sithe Global Power, LLC) is proposing to construct a 750 megawatt, coal-fired power plant in southeastern Lincoln County. In April 2003, the BLM Ely Field Office issued an EIS for the Toquop Energy Power Project, proposed by Toquop Energy, Inc. (Proposed Toquop Land Disposal Amendment to the Caliente Management Framework Plan and EIS for the Toquop Energy Power Project, March 2003). The project analyzed in the 2003 EIS was a 1,100-megawatt (MW) natural gas-fired electric power generation plant and associated facilities in Lincoln County in southern Nevada. Toquop Energy, Inc., proposed the project in order to generate electrical power at competitive costs for use by consumers and to meet the needs of forecasted electric load growth.

The BLM has determined that, although an EIS for the original gas-fired power plant has been completed, the currently proposed coal-fired power plant has a number of components that are different from the previously proposed gas-fired technology. Public scoping meetings were held in March of 2006, and an EIS has been completed. The BLM recently released an updated Draft EIS for this project on October 12, 2007. Public meetings were held in November 2007, and the comment period closed on December 11, 2007. Public scoping meetings were held in March of 2006 and an EIS is forthcoming. This Draft EIS addresses impacts of developing the power plant on the Toquop parcel.

The footprint of the proposed coal-fired plant is larger than what was analyzed in the 2003 EIS; the power plant, ash disposal, and topsoil storage areas would occupy a total of 475 acres. Additional acreage of desert tortoise habitat would also be disturbed due to construction of the rail spur. Fencing off the entire 640-acre area would make it all unavailable to desert tortoises.

1.4 REGULATORY FRAMEWORK

1.4.1 National Environmental Policy Act

This EIS was prepared to meet the requirements of NEPA (42 U.S.C. 4321–4347), the basic charter of the U.S. for protection of the environment. NEPA establishes the nationwide policy, goals, and legal authority for federal agencies regarding the environment (40 CFR 1500.1[a]). It requires federal agencies to study the environmental consequences of their actions and to use an interdisciplinary framework for environmental decision-making.

The NEPA process helps federal agencies make informed decisions with respect to the environmental consequences of their actions and ensures that measures to protect, restore, and enhance the environment are included, as necessary, as a component of their actions.

1.4.2 Endangered Species Act of 1973, as Amended

The ESA (16 U.S.C. 1531 et seq.) was passed by Congress in 1973 and amended multiple times between 1976 and 2004. The stated purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and to act on specified relevant treaties and conventions" (16 U.S.C. 1531 (b)).

USFWS, acting on behalf of the Secretary of Interior, oversees administration of the ESA. However, the Secretary of Commerce, acting through National Marine Fisheries Service (NMFS), is the listing authority for marine mammals and most anadromous fish species. With several exceptions, Section 9 of the ESA (16 U.S.C. 1538(a)(1)(B)) prohibits the take of any endangered species and defines take as follows: "[t]he term 'take' means to harass, harm, pursue, hunt, shoot, kill, trap, capture, collect, or to attempt to engage in any such conduct" (16 U.S.C. 1532(19)). USFWS has further defined "harm" to mean "an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation, where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). The term "harm" is defined by NMFS administrative rule to include "significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering" (64 FR 215).

1.4.2.1 Section 10 and Habitat Conservation Plans

Amendments to Section 10 of the ESA in 1982 allowed non-federal parties that engage in otherwise lawful activities that are likely to result in the "take" of ESA-listed species to obtain incidental take permits. This would be necessary if their actions are not otherwise covered by an incidental take statement under Section 7 of the ESA. Under Section 10(a)(2)(A) of the ESA, applicants for an incidental take permit are required to develop and submit a habitat conservation plan (HCP). HCPs are developed by project applicants and/or state and local government entities with advice and guidance from USFWS. The HCP defines the activities to be addressed, characterizes the extent to which activities may affect ESA-listed species and their habitat, and then specifies measures to minimize and mitigate for impacts to the ESA-listed species.

In 1982, Congress amended the ESA to allow for take of ESA-listed species "if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" (16 U.S.C. 1539(a)(1)(B)). In approving the 1982 amendments to the ESA, created under Section 10, Congress also expressed that HCPs be long-term, multiple-species plans that cover not only ESA-listed species, but also unlisted species, as long as those species are treated as if they were ESA-listed (H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 [1982]). Congress also recognized that HCPs should provide non-federal property owners seeking incidental take

permits under Section 10, economic and regulatory certainty regarding the overall cost of species mitigation over the life of the permit, but that HCPs should also make provisions for circumstances and information that could change over time and that might require revisions to an HCP (H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 [1982]). This regulatory certainty has often been referred to as 'no surprises.'

The *Habitat Conservation Planning Handbook* (HCP Handbook) indicates an HCP submitted in support of an incidental take permit application must include the following information:

- Impacts likely to result from the proposed taking of the species for which the permit coverage is requested;
- Measures the applicant will undertake to monitor, minimize, and mitigate such impacts, the funding that will be made available to undertake such measures, and the procedures to deal with unforeseen circumstances;
- Alternative actions the applicant considered that would not result in take, and the reasons why such alternatives are not being utilized; and
- Additional measures USFWS or National Marine Fisheries Service (NMFS) (collectively referred to as the Services) may require necessary or appropriate for purposes of the plan (USFWS and NMFS 1996).

On March 9, 1999, the USFWS and NMFS published a Notice of Availability for a "Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process" (64 FR 11485-11490), which provides additional guidance for HCPs and incidental take permits. The draft addendum emphasizes five points for the preparation of HCPs, including the need for:

- adequate monitoring based on measurable biological goals;
- incorporation of adaptive management to allow for changes in mitigation strategies;
- development of biological goals (based on habitat or species);
- appropriate terms for the duration of HCPs; and
- increased public participation.

In summary, an HCP is a plan authorized under Section 10 of the ESA (16 U.S.C. 1539) to conserve the habitat of species listed as threatened and endangered under the ESA or unlisted species also covered by the plan. Section 10 authorizes a non-federal applicant to negotiate a conservation plan with USFWS to minimize and mitigate any impact to threatened and endangered species, while conducting otherwise lawful activities for the general welfare of the public. Section 10 authorizes incidental take of individuals of species' populations covered by an incidental take permit, including those caused by disturbance of the habitat of such species, provided that an incidental take permit has been issued. Through recent rulings and guidance, the Services have stated that an HCP is intended not only to provide regulatory certainty to applicants, but also to include provisions that will work in the manner intended and meet the conservation goals of the plan through incorporation of clear goals, monitoring, and adaptive management strategy.

1.4.2.2 Section 7 Consultation

Although non-federal entities obtain an incidental take permit under Section 10 of the ESA, intra-service Section 7 consultation on the federal action of issuing the incidental take permit is still required, which results in the issuance of an incidental take statement on the federal action. In the intra-service consultation, USFWS or NMFS evaluates the potential effects relative to baseline conditions to determine whether the Proposed Action is likely to jeopardize the continued existence of the species under consultation. USFWS or NMFS then prepares a BO. The BO contains an assessment of the effects of issuance of the incidental take permit under the MSHCP on listed species and their habitat. If federal agencies other than the USFWS or NMFS are involved in the HCP process, a single BO issued by USFWS or NMFS would include an incidental take statement that authorizes any incidental take by the federal agency and an incidental take permit that authorizes any incidental take by the Section 10 permittee. The BO would include take limits, reasonable and prudent measures, and other terms and conditions.

In addition, the BO would determine whether the Proposed Action is likely to jeopardize the continued existence of an ESA-listed species or destroy or adversely modify critical habitat. A conclusion of "likely to

adversely affect" will be reached if any individual of an ESA-listed species could be harmed by the Proposed Action, even if the risk of an adverse effect to the overall population is low. Such a conclusion would mean that one or more individuals might be harmed by the Proposed Action. Incidental "take" may be authorized by USFWS through issuance of an incidental take permit. The Section 7 consultation on the issuance of an incidental take permit also requires that indirect effects of the Proposed Action, the potential for jeopardy to listed plants and effects on critical habitat be addressed in the HCP process.

1.4.3 Clean Water Act

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act. Originally enacted in 1948, it was totally revised by amendments in 1972. The 1972 legislation spelled out ambitious programs for water quality improvement that have since been expanded and are still being implemented by industries and municipalities. As amended in 1977, this law became commonly known as the CWA. The CWA established the basic structure for regulating discharges of pollutants into WOUS. It gave the U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also continued requirements to set water quality standards for all contaminants in surface waters. The CWA made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by nonpoint source pollution (EPA 2007).

1.4.3.1 Section 402

The CWA established the basic structure for regulating discharges of pollutants into WOUS. Section 402 regulates the discharge of relatively homogeneous pollutants (i.e., chemicals) through National Pollutant Discharge Elimination System (NPDES) permits. These traditional wastewater permits were expanded in 1987, when Congress amended the CWA to require the EPA to address stormwater runoff [CWA 402(p)]. Federal regulations were promulgated in 1990 as 40 CFR 122.26 with the first general permits issued in 1992. The CWA stormwater program is delegated to Nevada Division of Environmental Protection (NDEP) in Nevada.

1.4.3.2 Section 404

Federal jurisdictional authority over WOUS, including desert dry washes, is derived from Section 404 of the CWA, 1972, as amended in 1979 ("waters of the United States" is defined in 33 CFR Part 328.).

The goal of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. These waters include navigable waters and other waters (including desert dry washes) as defined in 33 CFR Part 328 of the United States and are the waters where permits are required for the discharge of dredged or fill material pursuant to Section 404 of the CWA. Under Section 404 of the CWA, the Corps was established as the federal agency responsible for permitting, with oversight by the EPA. The USFWS serves in an advisory role to the Corps with respect to potential wildlife or threatened and endangered species issues as authorized in the Fish and Wildlife Coordination Act 1934, as amended.

The Section 404(b)(1) Guidelines were developed by the Administrator of the EPA in conjunction with the Secretary of the Army acting through the Chief of Engineers under Section 404(b)(1) of the CWA (33 U.S.C. 1344), which provide specifications for disposal sites for discharges of dredged or fill material into WOUS. Sites may be specified through the Corps' regulatory program under Sections 404(a) and (e) of the Act (33 CFR Parts 320, 323 and 325).

1.4.3.3 Section 401

As indicated above, prior to the Corps issuing permit authorization (under Section 404 of the CWA) for the unavoidable placement of project-related fill material into WOUS (desert dry wash habitat), the Corps is required under Section 7 of the ESA to consult with the USFWS. In addition, the Corps must receive evidence of state 401 water quality certification from NDEP.

1.4.4 Federal Land Policy and Management Act

The Federal Land Policy Management Act (FLPMA) was enacted in 1976. This federal law governs the way in which the public lands administered by the BLM are managed. Through the FLPMA, Congress recognized the intrinsic value of public lands, and declared that these lands would remain in public ownership. Congress used the term "multiple use" management, which is defined as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people."

1.4.5 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 701-711) was enacted in 1918 between the United States and Great Britain (representing Canada as well), and Mexico in 1936, Japan in 1972 and the area previously known as the Union of Soviet Socialist Republics in 1976. The definition of migratory birds includes virtually all birds found in the United States with the exception of the domestic pigeon, the European starling, the house sparrow and various species of upland game birds. The MBTA established provisions regulating take, possession, transport and import of migratory birds, including nests and eggs. The MBTA prohibits the take of migratory birds, several of which would be included as evaluation or watch list species under the CSI MSHCP, if the proposed action were implemented. However, the MBTA includes permitting authority provisions for incidental take of migratory birds. To relieve permittees from liability under the MBTA for HCP Covered Species, the incidental take permit may also serve as a Special Purpose Permit authorized under MBTA regulations for the take of migratory birds. Any species to be covered by this type of Special Purpose permit must be listed under the ESA, and the incidental take of such species must be authorized, subject to applicable terms and conditions, under Section 10(a)(1)(B) of the ESA.

1.4.6 National Historic Preservation Act of 1996, as Amended

This act outlines the National Historic Preservation Plan and establishes the National Register of Historic Places (NRHP), Advisory Council on Historic Preservation (ACHP), and State Historic Preservation Office (SHPO). It requires federal agencies to locate, document and evaluate, under the National Register, all cultural resources within its jurisdiction. Section 106 requires that, prior to an undertaking, federal agencies identify eligible properties and assess the effects of the undertaking in consultation with the SHPO and ACHP.

1.4.7 Other Cultural Resource Protection Laws

Additional laws and regulations provide protection for cultural resources. The Antiquities Act of 1906 and Archaeological Resource Protection Act of 1979 make damage or removal of objects of antiquity located on federal property illegal unless permitted. The Historic Sites Act established the Historic American Buildings Survey, Historic American Engineering Record and National Survey of Historic Sites and Buildings and authorized the designation of National Landmarks. The American Indian Religious Freedom Act of 1978 and Native American Graves and Repatriation Act of 1990 mandates federal agencies be aware of and sensitive to Indian religious freedoms, identify culturally affiliated Native American groups, prepare summaries as to the disposition of Native American skeletal materials, funerary, and ceremonial objects that may be subject to repatriation and consult with Native Americans as to activities that may disturb sites.

1.4.8 Clean Air Act

In 1993, the EPA adopted regulations implementing Section 176 of the Clean Air Act as amended. Section 176 requires that federal actions conform to state implementation plans for achieving and maintaining the national standards. Federal actions must not cause or contribute to new violations of any standards, increase the frequency or severity of any existing violation, interfere with timely attainment or maintenance of any standard, delay emission reduction milestones, or contradict state implementation plan requirements. Federal actions that are subject to general conformity regulations are required to mitigate or fully offset the emissions caused by the action, including both direct and indirect emissions that the federal agency has some control over.

1.4.9 Executive Order 11990, Protection of Wetlands

Executive Order (EO) 11990 (1977), Protection of Wetlands, requires federal agencies to avoid, where possible, adversely impacting wetlands.

1.4.10 Executive Order 11988, Floodplain Management

EO 11988, Floodplain Management (1977), requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists.

1.4.11 Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

EO 12898 (1994), Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low- income populations and communities. According to the EPA, environmental justice is the:

> *"…fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."*

The goal of "fair treatment" is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

1.4.11.1 Nevada-Florida Land Exchange Authorization Act of 1988

On March 31, 1988, President Ronald Reagan signed the bill authorizing the exchange of federal lands in Nevada for privately-owned wetlands in Florida for wildlife conservation. The measure called for the federal government to sell the Nevada lands to the state and use the proceeds to fund the acquisition of additional lands for two national wildlife refuges in Florida.

Under the exchange agreement, Aerojet received title to 29,055± acres of public lands in Nevada managed by the BLM. An additional 13,767± acres were leased to the firm for 99 years. In return, the federal government received approximately 5,000 acres of wetlands owned by Aerojet in Florida. The Florida land was then sold to the South Florida Water Management District for its use in managing the water resources of southeastern Florida and the Everglades. The proceeds from that sale would then be used by the USFWS to buy additional lands and inholdings at existing elements of the National Wildlife Refuge system in the State of Florida (USFWS 1998b).

1.4.12 State of Nevada Legislation and Regulations

1.4.12.1 Nevada Water Law

Nevada water law is founded on the doctrine of prior appropriation, or "first in time - first in right." Nevada law explicitly states that all waters of Nevada are public property and that a water right is a right to put that water to beneficial use. Beneficial use is the basis of a water right in Nevada. Nevada water law is set forth in the Nevada Revised Statutes (NRS), Chapters 532 through 538.

The Nevada Division of Water Resources, headed by the State Engineer, is responsible for the administration and enforcement of Nevada's water law. This includes overseeing the appropriation, distribution, and management of the state's surface and groundwater.

The general groundwater policy of the State Engineer is to limit water withdrawals from a basin to the average annual recharge for that basin. However, in basins where an outside source of supply is assured, the State Engineer may allow withdrawals in excess of the annual recharge. To do this, the State Engineer designates the basin and issues temporary permits subject to revocation at a later date when water becomes available from an outside source. For example, in the Las Vegas Artesian Basin, "temporary revocable permits" have been issued and may be revoked when Colorado River water becomes available.

As part of the duties of the office, the State Engineer reviews applications for new water rights appropriations. In approving or rejecting an application, the State Engineer considers the following questions as set forth in NRS 533.370: "1) is there unappropriated water in the proposed source?; 2) would the proposed use impair existing rights?; and 3) will the proposed use prove detrimental to the public interest? Public interest is not defined by statute and the State Engineer can consider different issues, depending upon the individual application."

For applications for interbasin transfers, the State Engineer considers the following per NRS 533.370.6: "1) Whether the applicant has justified the need to import the water from another basin; 2) If the State Engineer determines that a plan for conservation of water is advisable for the basin into which the water is to be imported, whether the applicant has demonstrated that such a plan has been adopted and is being effectively carried out; 3) Whether the proposed action is environmentally sound as it relates to the basin from which the water is exported; 4) Whether the proposed action is an appropriate long-term use which will not unduly limit the future growth and development in the basin from which the water is exported; and 5) Any other factor the State Engineer determines to be relevant."

For applications requesting a temporary change, the State Engineer considers the following, per NRS 533.345: "1) The application is accompanied by the prescribed fees; 2) the temporary change is in the public interest; and 3) the temporary change does not impair the water rights held by other persons. A temporary change can be granted for up to a year's length of time." If the State Engineer determines that the application for a temporary change is not in the public interest or has the potential to impair water rights held by other persons, a notice of the application will be given and a hearing held. A decision will be made as provided for in NRS 533.360.

Further explanation of Nevada Water Law and its administration is included in Appendix K: Summary of Nevada Water Law and Its Administration.

1.4.12.1.1 State Engineer Order 1169

In 1985, the Nevada Legislature authorized a program, a cooperative effort between the State of Nevada and the federal government, to study the carbonate-rock aquifer system of eastern and southern Nevada. Preliminary findings indicated that large-scale development (sustained withdrawals) have the potential to result in water-level declines in the aquifer system, deplete stored water, reduce flow of warm-water springs that discharge from regional aquifers, and deplete storage in nearby aquifers. However, confidence in prediction of the effects of development was low (Dettinger 1989). It was recommended that development be staged gradually and hydrologic conditions be monitored.

In State Engineer Order 1169, the Nevada State Engineer held in abeyance carbonate-rock aquifer system groundwater applications pending or to be filed in specified hydrogeographic basins, including the Coyote Spring Valley Basin "… until further information is obtained by stressing the aquifer by those water rights already permitted for the appropriation of water from the carbonate-rock aquifer system (Basin 210)." State Engineer Order Number 1169 specifies that a study must be conducted to provide information on the effect of pumping permitted rights that are not yet in production within the Coyote Spring Valley Basin on prior existing rights and the environment. The results of this study will be used to assess long-term impacts to the aquifer and down-gradient flows. No additional water rights will be issued to appropriate waters from the Coyote Spring Valley Basin until after the required pump test and report are completed and the Nevada State Engineer has determined that he has sufficient data to support the granting of additional permits. Development within Lincoln County will not occur without additional water resources being brought to the new town.

CSI is currently working with SNWA, LVVWD, MVWD, and Nevada Power Company, under direction of the Nevada State Engineer, to conduct the pump test and monitoring activity within the basin and surrounding basins in accordance with State Engineer Order 1169.

1.4.12.2 Nevada Revised Statutes that Address Wildlife and Plants

Nevada Revised Statutes (NRS) were amended, most recently in 1991, to expand the State's requirement to classify wildlife (NRS 501.110). The classification of species occurs through administrative regulation by the Nevada Board of Wildlife Commissioners (NRS 501.105 and 501.181) and is codified in the Nevada Administrative Code (NAC).

NDOW is the entity vested with statutory authority, through the NRS, to protect and manage resident wildlife in the state. The Nevada Board of Wildlife Commissioners establishes policy and regulations for the protection, propagation, transplanting, introduction and management of wildlife (NRS 501.105, 501.181, 501.331, 501.337). The desert tortoise is listed as protected and further classified as threatened in Nevada (NAC 503.080). Gila monster (*Heloderma suspecturn*) is listed as a State Protected reptile (NAC 503.080). Specific regulations providing protection for all wildlife species classified as protected are set forth in NAC 503.090 and 503.093.

Plant species that may occur within the project area of the Proposed Action and that are listed as critically endangered by the State of Nevada are listed in NRS 527.270 and 527.050. As such, "no member of its kind may be removed or destroyed at any time by means except under special permit issued by the state forester." The Nevada Division of Forestry (NDF) also regulates the collection of cactus and yuccas through permit requirements under NRS 527.070.

NRS Chapter 278 gives Lincoln County authority to carry out a plan for infrastructure financing through the negotiation of DAs.

1.4.12.3 Stormwater Management

NDEP has adopted the General Permit for Stormwater Discharges Associated with Construction Activity (NVR100000), which supersedes the now-expired General Permit GNV0022241. This permit is administered and enforced by NDEP, with cooperation from local municipalities that have their own ordinances controlling discharges to the drainage system. The General Permit for Construction Activity establishes a number of stormwater management requirements for construction site owners and operators.

1.4.13 Lincoln County Legislation and Regulations

1.4.13.1 Lincoln County Master Plan

The Lincoln County Master Plan describes land uses throughout the County, provides for regional services and facilities, and governs development within unincorporated areas (Lincoln County 2006). The purpose of the plan is to guide the county's growth, management of natural resources, provision of public services and facilities, and the protection of the public's health, safety, and welfare. Goals and policies are established for growth, the plan's relationship with zoning ordinances, identifying lands for development, public services and facilities, parks and facilities, suitable housing, agriculture, transportation, and the county's economy. Land use guidance has been prepared specifically for the Coyote Springs Planning Area. The master plan is updated every five years. The most recent plan was released for the public on December 4, 2006.

1.4.13.2 Lincoln County Code Title 12, Flood Damage Prevention

The purpose of Title 12 of the Lincoln County Code (1983 Code § 15.08.010) is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. It includes methods and provisions that, among others, control the alteration of natural floodplains, stream channels, and natural protective barriers that help accommodate or channel floodwaters; control filling, grading, dredging and other development that may increase flood damage; and regulate construction of flood barriers.

1.4.13.3 Lincoln County Code Title 15, Coyote Springs Planned Unit Development Code

Ordinance 2004-04 created the Coyote Springs Planned Unit Development Code (Coyote Springs PUD Code). The purpose of the Coyote Springs PUD Code, adopted by Ordinance No. 2004-04, is for the regulation and maintenance of planning and zoning within the Coyote Springs Planning Area, as authorized under NRS Chapter 278 (Planning and Zoning) and NRS Chapter 278A (Planned Development). The Coyote Springs PUD Code establishes a Planned Village Development Land Use Plan, which creates land use zones and the land uses allowed within these zones. The Coyote Springs PUD Code specifies minimum development and design standards for all buildings, streets, open space, and infrastructure (i.e., storm drainage, natural gas, etc.). The Coyote Springs PUD Code establishes a procedure to approve development as it occurs in phases. Planned Unit Development plans will be submitted to Lincoln County for approval or denial.

Ordinance 2005-07 authorized creation of the Coyote Springs – Lincoln County General Improvement District (GID). In accordance with NRS 318.1177, the Coyote Springs – Lincoln County GID is authorized to, among other things, establish an area or zone for the preservation of one or more species or subspecies of wildlife that has been declared endangered or threatened pursuant to the ESA. This authorization will allow the GID to establish, control, manage and operate or provide money for the establishment, control, management and operation of any such area or zone that is created.

Ordinance 2005-06 authorized creation of the Coyote Springs-Lincoln County Fire Protection and Emergency Medical Service General Improvement District (FPEMS GID). In accordance with NRS 318.1181 and 318.1185, the FPEMS GID is authorized to provide fire protection and emergency medical equipment and services.

1.4.13.4 Coyote Springs Development Agreement [DA]

The Coyote Springs DA between Lincoln County and CSI for the Coyote Springs Master Planned Community was conditionally approved on December 20, 2004, and unconditionally approved on June 6, 2005 (County and CSI 2005, Appendix E). The agreement details how the development will be implemented for the following components: public facilities; water conservation, reuse and sanitation; parks, open spaces, and schools; transportation; flood control; and review and financing.

Under the Coyote Springs DA, master plans will be developed for certain aspects of development. A Master Parks Plan for each park development will be created if Lincoln County adopts a Residential Construction Tax for construction of parks in accordance with NRS. CSI would assist in the development of a Master Plan for Schools. A traffic study and technical drainage study will be required with each Tentative Planned Unit Development plan. Under the Coyote Springs DA, CSI agreed to apply for a temporary stormwater construction permit and dust mitigation permit according to NDEP requirements.

1.4.13.5 Lincoln County Public Land Management and Use Plan

This plan, adopted by the Lincoln County Board of Commissioners in December 1997, guides the use of public lands and public resources in Lincoln County. The plan established a Lincoln County Public Lands Commission, which is no longer in existence. Instead, Lincoln County's Planning Commission now serves in this role. This plan developed policies for each of the following resources: water resources, forestry/desert products, agriculture, cultural resources, recreation, wildlife and fisheries, endangered species, wilderness, wild horses, grazing, wetlands, and access and transportation. It is intended to enhance coordination of public land management in the county prior to actions taken by federal agencies. Areas of concern addressed by the plan include private property rights, free market economy, local authority in land use decisions for local communities and individuals, and future viability of Lincoln County's rural communities.

1.4.13.6 Master Declaration of Covenants, Conditions and Restrictions, and Reservations of Easements for Coyote Springs Master Planned Community

On March 31, 2005, a Master Declaration of Covenants, Conditions and Restrictions and Reservations of Easements for Coyote Springs Master Planned Community was recorded in Official Records, Lincoln County, Nevada in Book 199, as Document No. 124249. It is anticipated that the Master Declaration will be amended

and restated during the third quarter of 2007. All private property within the CSI Development in Lincoln County will be held and conveyed subject to the covenants, conditions, restrictions, reservations, easements and equitable servitudes, liens and charges contained in the amended document.

Included in this document are conditions, easements and restrictions that may help protect sensitive species and their habitat. These include, among others, conditions and restrictions related to water use, reuse and waste, endangered species, landscaping control, open range/critical environmental lands, nuisances (e.g. restrictions on rubbish, noise, motorcycles, dirt bikes or other mechanized vehicles), weed control, drainage, paths and trails, fire, mining and drilling, and hazardous and toxic substances. Provisions are made for violations of these conditions and restrictions. Additional detail for conditions and restrictions that have the potential to benefit special-status species are provided in Chapter 6: Conservation Measures of the CSI MSHCP.

1.5 DOCUMENT STRUCTURE

The overall structure of the document is as follows:

- **Section 1: Introduction** provides an initial overview of the proposed federal actions and planned community, as well as background on project origins and development.
- **Section 2: Purpose of and Need for Action** further explains the purpose and need for these federal actions and CSI's purpose of developing the planned community.
- **Section 3: Description and Comparison of the Alternatives** lays out the proposed action, the No Action Alternative, and an additional action alternative. This section also describes alternatives considered and dismissed and provides a comparison of the retained alternatives.
- **Section 4: Affected Environment** describes the affected environment for each issue retained for analysis.
- **Section 5: Environmental Consequences** describes the environmental effects of each of the three alternatives considered in the EIS. It also presents additional sections required for EIS documents, such as unavoidable and irretrievable commitment of resources, unavoidable adverse effects, and the relationship between short term uses of the environment and maintenance and enhancement of long-term productivity. Cumulative effects of other actions in the past, present, and foreseeable future are also described.
- **Section 6: Compliance and Coordination** presents public and agency involvement in the process and lists of preparers, contributors, and to whom the EIS will be distributed.
- **Section 7: References Cited** provides a list of references cited throughout the main body of this document. References cited in the appendices will be listed at the end of the appropriate appendix.

Appendices of various materials supporting the analyses presented in this EIS are located in Volume 3: Appendices.

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SECTION 2

Purpose and Need for Action

Section 2: Purpose and Need for Action

2.1 BACKGROUND

The action that triggers a need to apply for an incidental take permit is the Applicant's proposal to develop a new town in Lincoln County that would meet local housing needs and allow for economic development. The need for such a project in Lincoln County is driven by the economic needs of the county, which is 98 percent federally owned and as a result suffers economically due to the lack of sufficient revenues to provide adequate housing and services for its residents. Currently housing and services are substandard as compared to other areas within southern Nevada.

Concerns also have been raised by Lincoln County residents that the county's population is aging and younger people are forced to leave because of lack of economic opportunity (Lincoln County 1991, 2006; Gibbons 2004). U.S. Census data indicate that these concerns are valid. Between the 1990 and 2000 censuses, the population in Lincoln County within the 20 to 24 and 25 to 34 age groups decreased by 16.67 percent (U.S. Census Bureau 2000). Rural counties often see declines in the population sizes of these age groups, because these age groups often leave rural areas to seek better opportunities (Harris et al. 2004). Harris et al. (2004) suggest encouraging these age groups to stay should always be a goal for rural economic development.

Based on information from 1970 through 2003, Lincoln County has the fourth most unstable economy of Nevada's 19 counties. This indicates a dependency on a single economic sector, such as mining. Economic diversification would stabilize the county's economy (Harris et al. 2004). This instability index encapsulates a time frame when mining employment and real earned income declined by 95 percent (between 1980 and 1994) from the closure of several mining operations (Borden et al. 1996). Development of additional commercial and industrial facilities within the county can provide diversification and increased employment opportunities.

According to the U.S. Census Bureau, Nevada was the fastest growing state between 2000 and 2005, with a population increase of 20.8 percent (U.S. Census Bureau 2007). The Las Vegas Valley has seen the majority of this growth, with a net increase of 28.2 percent during the same time period (Clark County Comprehensive Planning 2007). Consistent with these data, the Las Vegas Valley has experienced a greater influx of people to the area than current housing and available land for development can support. Large parcels for development are scarce. The lack of available land has greatly impacted the land supply-demand chain in southern Nevada causing rapid increases in home prices over the past few years. The lands owned and leased by CSI are within a driving distance of the Las Vegas Valley (approximately 50 miles) and could contribute a housing supply for both Lincoln County and the Las Vegas Valley in Clark County.

The Clark County economy is driven by tourism/gaming, and the associated employment base is consequently weighted towards lower to mid-level paying service jobs in the entertainment and retail sectors. In general, the desirable ratio for home affordability is not more than three times income. The median price of a house in Las Vegas in 2003 was $166,630, nearly four times the median family income of $44,078 (U.S. Census Bureau 2008). The most recent data from January 2008 lists the median price at $280,000, which is almost five times the median income of $57,471 from the same time period (U.S. Census Bureau 2008).

The applicant's project is anticipated to benefit socioeconomic conditions within the region through 1) the development of additional affordable housing in southern Nevada with home prices starting anywhere from 10 to 35 percent less than current home prices within the Las Vegas Valley and 2) the development of increased economic opportunities and tax base for Lincoln County.

2.2 NEED FOR PROJECT AND FEDERAL ACTIONS

CSI, the Applicant, proposes to develop a master planned town (CSI Development) in southern Lincoln County, Nevada. The need for the USFWS and Corps actions is based on the potential that these activities

proposed by CSI on their property and lease lands could result in the take of Covered Species and effects to WOUS, thus, the need for incidental take and Section 404 permits. Issuance by the USFWS of a Section 10(a)(1)(B) incidental take permit, issuance of a CWA Section 404 permit by the Corps, and issuance of a right-of-way grant and reconfiguration of leased federal lands by the BLM are federal actions that trigger review under NEPA (42 U.S.C 4321-4347). Because BLM actions are necessary to implement the CSI MSHCP, those federal actions (reconfiguration of the land holdings and management of the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP) are also analyzed in this EIS.

2.3 PURPOSE OF PROJECT AND FEDERAL ACTIONS

As noted in Section 1.0, this EIS has been developed for the following purposes:

- To evaluate the impacts of implementing the Coyote Springs Investment LLC's MSHCP by the Executive Committee (i.e., USFWS, CSI, and BLM);
- To address the issuance of a Section 10(a)(1)(B) incidental take permit (incidental take permit) by the USFWS based upon this plan;
- To protect and conserve the Covered Species and their habitat for the continuing benefit of the people of the United States;
- To address the issuance of a permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), to authorize the discharge of dredged or fill material into WOUS (desert dry wash habitat);
- To address the reconfiguration of the public and private land holdings;
- To address the management of the BLM leased lands with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and implementation of the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species;
- To address the issuance of a right-of-way grant for detention basins on BLM lands west of U.S. Highway 93; and
- To ensure compliance with the ESA, CWA, NEPA, and other applicable federal laws and regulations.

The USFWS is the acting lead agency, with the Corps and BLM[5] as cooperating agencies. These agencies have determined these actions to be major federal actions requiring an EIS under NEPA and its implementing regulations (40 CFR 1500-1508). The agencies will determine whether the Proposed Action, or another alternative, should be permitted to proceed.

2.4 DECISIONS REQUIRED

2.4.1 U.S. Fish and Wildlife Service

Before issuing a 40-year incidental take permit for the Covered Species, the USFWS must affirmatively answer each of the following questions, as required by Section 10(a) of the ESA:

- Is the proposed take incidental to an otherwise lawful activity?
- Are the impacts of the proposed take minimized and mitigated to the maximum extent practicable?
- Has the applicant ensured that adequate funding will be provided to implement the measures proposed in the HCP?
- Is the proposed take such that it will not appreciably reduce the likelihood of the survival and recovery of the species in the wild?
- Are there any other measures that should be required as a condition of the permit?

[5] The BLM is a cooperating agency because it holds the title to the lease lands under consideration in this project.

After reviewing the MSHCP and responding to these questions as required by ESA, the USFWS may issue a permit conditioned on implementation of the MSHCP submitted by the applicant; issue a permit conditioned on implementation of the submitted MSHCP together with other measures specified by the USFWS; or deny the permit application.

The USFWS must also conduct an internal consultation under Section 7 of the ESA to ensure that actions relative to the incidental take permit will not jeopardize the continued existence of threatened, endangered, or Covered Species or result in destruction or adverse modification of designated critical habitat. The internal Section 7 consultation on the USFWS's action of issuance of the incidental take permit would be completed before the Record of Decision is issued under NEPA.

2.4.2 U.S. Army Corps of Engineers

Before issuing a Section 404 permit for the proposed action, the Corps must answer each of the following questions as required by Section 404 of the CWA:

- Does the proposed action comply with the requirements of Section 404 guidelines, with or without inclusion of appropriate and practicable discharge conditions to minimize pollution or adverse effects to the affected aquatic ecosystems?
- Does the proposed action contribute to or cause significant degradation of the WOUS?
- Does the proposed action cause or contribute to violations of any applicable State of Nevada water quality standard?
- Does the proposed action violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act?
- Does the proposed action jeopardize the continued existence of species listed as endangered or threatened under the ESA of 1973?
- Does the proposed action violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972?

After reviewing the EIS and other permit application materials and responding to these questions as required by the CWA, the deciding official (Corps) would decide whether to issue or deny permit authorization to allow for the placement of fill material into WOUS as proposed by the project and issue a permit as proposed, or deny the application at this time.

2.4.3 Bureau of Land Management

After reviewing the EIS, the deciding official (BLM) would decide whether or not to implement a reconfiguration of land holdings and manage the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species. The BLM will also make decisions on the approval for the flood control structures and detention basins in the utility corridor west of U.S. Highway 93 in Lincoln County.

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SECTION 3

Description and Comparison of the Alternatives

Section 3: Description and Comparison of the Alternatives

Consistent with NEPA requirements, this chapter presents a summary of the Preferred Alternative, one other action alternative, and a No Action Alternative. USFWS and BLM review projects in accordance with their respective and applicable regulations and policies. Additionally, the Corps reviews projects in accordance with its 404 regulations, including EPA's 404(b)(1) Guidelines, which also require an alternatives analysis. According to the 404(b)(1) Guidelines, "[o]n occasion, . . . NEPA documents . . . may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines. In [such cases], it may be necessary to supplement these NEPA documents with this additional information." [40 CFR § 230.10(a)(4)] Appendix L is intended to provide the necessary supplementation to satisfy the alternatives analysis requirements of EPA's 404(b)(1) Guidelines.

Under the two action alternatives considered in this EIS, varying amounts of land would be developed, resulting in different levels of incidental take of federally listed species and different impacts to WOUS. Under the No Action Alternative, the proposed CSI MSHCP would not be adopted, permits pursuant to Section 10 (a)(1)(B) of the ESA and Section 404 of the CWA would not be issued by the USFWS and Corps, respectively, and the BLM would not reconfigure the land holdings, alter management of the BLM leased lands, or grant a right-of-way for detention basins in the BLM utility corridor west of U.S. Highway 93. The No Action Alternative provides a baseline against which to assess the environmental impacts of the Preferred Alternative and other action alternative.

Additional alternatives were considered during the development of the EIS, but rejected because they did not meet stated goals or objectives of CSI or the USFWS, or were not reasonable or feasible. These are described in Section 3.4: Alternatives Considered But Dismissed, after the section describing the alternatives retained for analysis. Off-site as well as on-site configurations to minimize effects to WOUS were analyzed for the associated Section 404 permit and are also included in Appendix L of this document. Alternatives considered were also compared in Section 3.5: Comparison of the Alternatives. A table indicating effects of each alternative that was fully analyzed has been included here.

3.1 ALTERNATIVES DEVELOPMENT

Pursuant to NEPA, an EIS is required to discuss the potential environmental impacts of a Preferred Alternative and alternatives (40 CFR 1508.9). A range of reasonable alternatives for activities within CSI lands that could reduce the impacts on sensitive species were evaluated with respect to feasibility and benefit gained.

The USFWS and NMFS *Habitat Conservation Planning Handbook* states that at least two types of alternatives need to be addressed in the HCP: (1) "any specific alternative, whether considered before or after the HCP process was begun, that would reduce such take below levels anticipated for the project proposal" and (2) "a no-action alternative, which means that no permit would be issued and take would be avoided or that the project would not be constructed or implemented." (USFWS and NMFS 1996). These same alternatives are analyzed in this EIS. In this EIS, the alternative analyzed that reduces take below levels anticipated for the project proposal is the No Action Alternative.

This section and Appendix L: Alternate Sites and Scenarios provides a description of the process used to develop alternative approaches to mitigate impacts on species addressed in the CSI MSHCP and impacts to WOUS, as well as a comparison of alternatives selected.

Various measures to avoid, minimize, and compensate for impacts on species addressed by the CSI MSHCP and potentially affected WOUS were evaluated. Several of these measures were grouped together to form alternatives. The alternatives were compared with the Preferred Alternative based on the evaluation criteria.

The criteria[6] used to evaluate measures and alternatives in this EIS are as follows and described more fully below:

- conservation measures for MSHCP Covered Species,
- effects to WOUS,
- costs, and
- other impacts on the human or natural environment.

3.1.1 Conservation Measures for MSHCP Covered Species

Measures that would not result in substantial minimization of take or enhancement of numbers or habitat for MSHCP Covered Species would not meet project objectives for mitigating impacts and therefore were considered not effective. The Desert Tortoise Recovery Plan was reviewed when developing conservation measures, so they would be consistent with the recovery actions of the plan (USFWS 1994, USFWS in review).

For analyzing land configuration options within the project area, CSI conducted an intensive, science-driven process to identify a development configuration that would meet multiple resource conservation criteria and achieve consistency with or exceed conservation efforts in southern Nevada. CSI engaged science advisors, which included expert representatives from USFWS, University of Nevada–Reno (UNR), USGS, USFWS, and NDOW to assess alternative open space and reserve design options. The science advisors used site information, data from pertinent studies at other locations, and generally accepted principles of conservation planning in an effort to define and then refine reserve boundaries. They used an iterative process that considered all resident species and those that used portions of the property as dispersal corridors as well as minimizing disturbance to aquatic resources. An array of development and open space options were vetted; those involved development footprints that varied substantially in the number of reserved land patches, their sizes and distances apart, their edge and interior ratios, and their locations in relation to presumed landscape linkages that might be used as wildlife corridors. Biological assessments and other pertinent information were reviewed by the science advisors in light of local and regional species status, trends, and resource needs. Following additional discussions and site visits with resource agencies, including the USFWS, Corps, and EPA in 2006 and early 2007, the proposed land configuration was modified to the form as it appears in the Preferred Alternative (Figure 1-4). Earlier versions of land configurations considered are described in Section 3.4: Alternatives Considered but Dismissed.

Some of the minimization and mitigation measures discussed in the development of alternatives during TSC meetings from 2001 to 2004 included fences, soft-bottomed culverts, reserve areas, islands of habitat, pets, dust control, education, and landscaping.

3.1.2 Effects to Waters of the United States

Impacts to WOUS were considered when determining the feasibility of alternatives and mitigation measures. Loss or alteration of ephemeral surface water drainages and flow could potentially occur. Measures that would not result in minimization of effect to WOUS do not meet project objectives and therefore were not considered effective.

3.1.3 Cost

The estimates of the costs of implementing mitigation measures include capital, operations and maintenance. Conservation measures that were unduly costly, especially if the costs did not result in substantial added benefits to MSHCP Covered Species, were considered economically infeasible.

[6] Somewhat different criteria are used to evaluate impacts to WOUS under the 404(b)(1) Guidelines, and those are discussed in Appendix M.

3.1.4 Other Impacts on the Human or Natural Environment

Impacts on the human or natural environment were considered in the determination of the feasibility of mitigation measures and alternatives. Potential impacts include the effects on cultural resources, the local economy, and actions beneficial to natural resources. If implementation of a mitigation measure or alternative would result in potentially significant and adverse direct or indirect effects on the human or natural environment, it was considered infeasible. Such impacts and measures discussed in the development of alternatives included light pollution, noxious weeds, resident-wildlife interactions, islands of habitat, OHV use, affordable housing, CCRs, managing predators and urban wildlife, golf course design, smart growth measures, and transportation issues.

3.2 ALTERNATIVES CONSIDERED FOR THE EIS

3.2.1 No Action Alternative

Under the No Action Alternative, the proposed CSI MSHCP and creation of the Coyote Springs Investment Conservation Lands (CSICL) would not occur, and permits pursuant to Section 10 (a)(1)(B) of the ESA and Section 404 of the CWA would not be issued for development of the CSI lands in Lincoln County. The BLM also would not reconfigure the land holdings or alter existing management of the BLM leased lands. No right-of-way grant for detention basins in the BLM utility corridor would be issued by BLM. Thus, CSI's project purpose, as defined in the Section 404 application (Appendix P), would not be met under the No Action Alternative.

The existing land configuration of CSI private and lease lands would be maintained. Lease lands in Lincoln County would remain an island within the privately-owned land (Figure 3-1).

Because of the proximity of private CSI lands in Lincoln County to ongoing development on adjacent private CSI lands in Clark County, development of the private land in Lincoln County would likely occur in the future. If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County, totaling approximately 21,454 acres, would be sold to individual landowners, who would be responsible for obtaining required incidental take and Section 404 permits. Individual landowners would be responsible for SHPO coordination if development of their properties were to potentially impact known cultural resources. Individual landowners would also be responsible for negotiating mitigation measures with the appropriate regulatory agencies.

If CSI lands in Lincoln County were sold to individual landowners, these individual owners would be responsible for developing infrastructure, including roads and water, sewer, and power facilities. Because of the lack of existing infrastructure, development of the CSI private lands by individual landowners would likely not occur across the entire 21,454 acres of land. Detention basins within the BLM utility corridor west of U.S. Highway 93 would likely not occur as a result of development by individual landowners under the No Action Alternative.

Land leased by CSI from BLM in Lincoln County (approximately 7,548 acres) would be available for the full suite of activities authorized in the Land Lease Agreement. The uses for this land could include constructing and operating roads, utility lines, storage facilities and wells, and for any other lawful purpose which the Secretary of the Interior may authorize, subject only to the requirements of the Nevada-Florida Land Exchange Authorization Act of 1988 and to reasonable requirements the Secretary of Interior may establish for the protection of the desert tortoise and any other species of fish, wildlife, or plants. Under the No Action Alternative, CSI could retain the lease in full or could assign one or more small areas to a third party for use specifically to support activities on the private lands. If development occurred under the existing configuration, the lease lands would likely need to be used for roads, utilities, and other approved uses to support and connect the projects that would occur on both the east and west sides of the leased area.

Under the No Action Alternative, the 6,219 acres of CSI lease land in Clark County would not be counted as a mitigation measure for activities on lands in Lincoln County to desert tortoise. The 6,219 acres would still be added to the CSICL, as described in ENTRIX et al. 2005, but would not be managed for the conservation of desert tortoise and other Covered Species. Therefore, the No Action Alternative would not result in the

creation of conservation lands that would be permanently managed for the conservation of the desert tortoise and other Covered Species.

Under the No Action Alternative, funding mechanisms afforded by the CSI MSHCP would not be available to the USFWS, unless individual Section 10 permits with similar provisions were issued to individual landowners. No oversight or coordination afforded by the CSI MSHCP would be available. Under the No Action Alternative, no adaptive management plan or coordinated monitoring program for special status species would be developed or implemented.

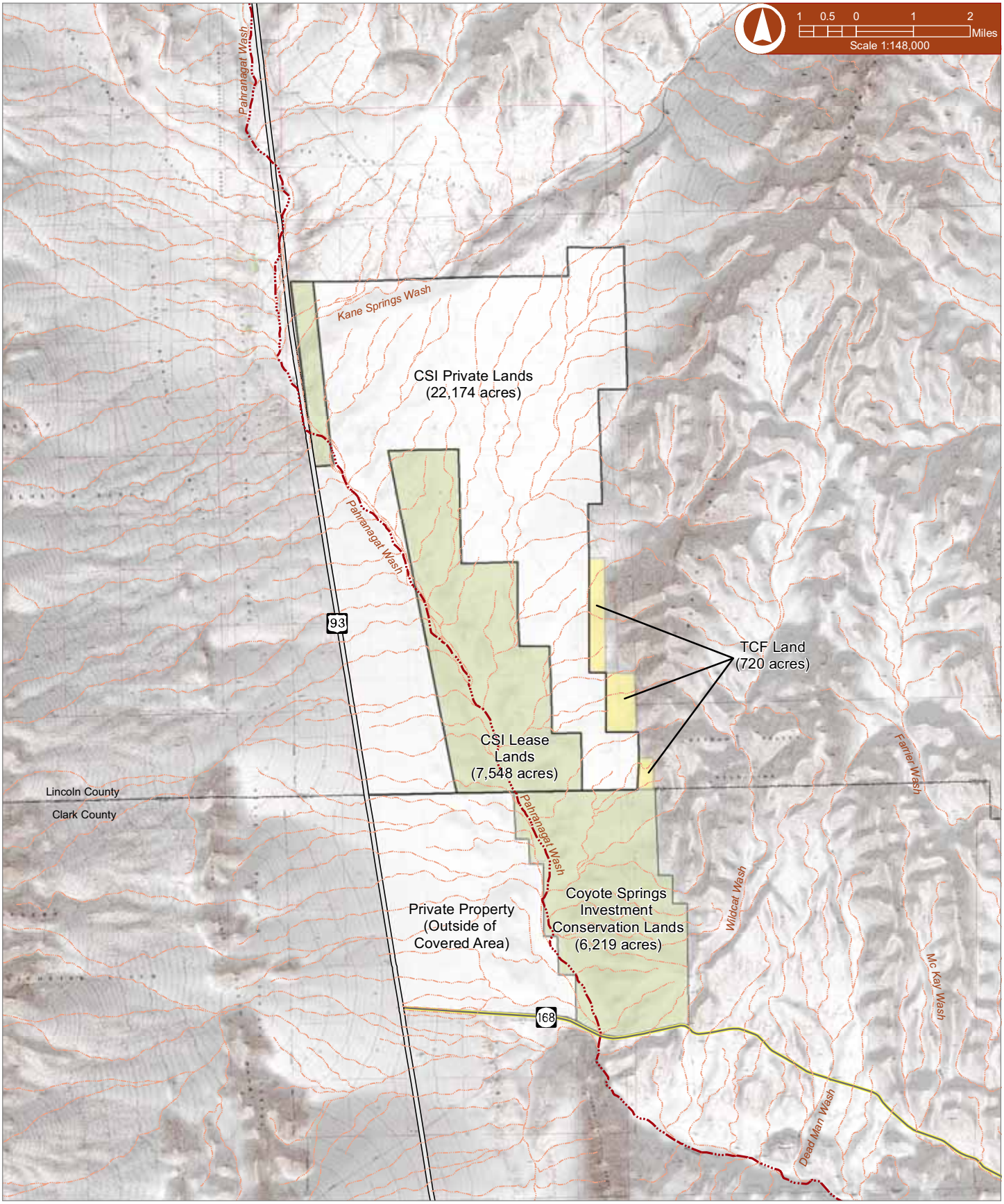
3.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

Under the Preferred Alternative, a CSI MSHCP would be implemented for the Development Area and CSICL; the USFWS would issue a 40-year incidental take permit to CSI for activities specified in the CSI MSHCP; the Corps would issue a Section 404 permit to CSI for the CSI Development, including activities in the BLM utility corridor; and the BLM would reconfigure the land holdings, manage the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, and grant a right-of-way for detention basins in the BLM utility corridor west of U.S. Highway 93 for flood control purposes. This alternative would allow CSI to develop a town in southern Lincoln County, Nevada, and to implement conservation measures, as described below. Covered and Evaluation Species that would be addressed under the CSI MSHCP and the incidental take permit are described in Table 1-1. Activities would be implemented under the Preferred Alternative (as a result of issuance of these two permits) within the project area. Activities related to the CSI MSHCP would only occur within the Development Area and CSICL, while activities related to the Section 404 permit would also occur within the BLM utility corridor.

Components of the CSI Development include: 1) community development and construction activities, 2) recreational facilities and open space, 3) utility infrastructure, 4) water supply infrastructure and management, 5) flood control structures and maintenance, and 6) resource management features.

The proposed town would include residential housing, mixed-use urban villages, public buildings, and other public facilities. Commercial and light industrial development would occur to support the local community. Hotels, resorts, and casinos would be built. Roads and bridges would be constructed. Recreational facilities (e.g., golf courses, amusement parks, parks, playfields, trails and open space areas) would serve residents and visitors. Utilities and other infrastructure would be developed to serve the town. These would include power facilities, possible renewable energy production facilities, sanitary sewer and wastewater treatment facilities, stormwater facilities, solid waste disposal transfer stations, and telecommunications facilities. Water supply treatment facilities, monitoring wells, production wells, storage facilities, and transmission and distribution facilities would also be Covered Activities under this alternative. Treated effluent storage, distribution and discharge facilities would be constructed. Flood control structures would be developed and operated. Resource management features would be an important component of the Preferred Alternative. These features would include a re-alignment of the existing land ownership (to protect special status species and their habitat and to minimize and avoid impacts to WOUS) and designation of conservation lands.

CSI owns approximately 21,454 acres of land in Lincoln County. Additionally, CSI has a 99-year lease (with an automatic renewal for 99 years unless terminated by CSI) from the BLM on approximately an additional 7,548 acres in Lincoln County and 6,219 acres in Clark County. Total build out of the proposed CSI Development would cover approximately 21,454 acres of privately-owned land (Development Area). Full build out may occur over a period of up to 40 years. Detention basin facilities could be sited within the BLM utility corridor west of U.S. Highway 93, which would impact up to 244 acres of public land alongside the Development Area in Lincoln County. This activity would not be included in the CSI MSHCP.



Land Status

- Private Lands
- Conservation Lands or Lease Lands
- The Conservation Fund Parcels
- Highway
- State Route
- Ephemeral Channel
- Desert Dry Wash

CSI Planned Development Project Final EIS

Figure 3-1
Configuration of CSI Lands in Lincoln County under the No Action Alternative

ENTRIX

Full build out may occur over a period of up to 40 years. The timing and ultimate extent of construction activities under the Preferred Alternative would be limited by the availability of water for the community. An estimated 70,000 afa of water is needed to reach a full build out of the Development Area in Lincoln County. Currently, CSI and its affiliates (specifically Tuffy Ranch Properties, LLC) hold approximately 36,000 afa in certificated groundwater rights in various basins within Lincoln County. Tuffy Ranch Properties, LLC also holds approximately 7,670 afa of surface water in three different basins in Lincoln County. Nevada Water Law establishes a specific process for the approval of applications for new appropriations and changes in the point of diversion, manner or place of use of existing appropriations. CSI and its affiliates would comply with all legal requirements under Nevada Water Law and regulations as specific projects are identified. At present, the only groundwater supply approved by the State Engineer (Ruling #5712) and designated for use within the project area is 1,000 acre-feet appropriated within the Kane Spring Valley, which was addressed in the Kane Springs Valley Groundwater Development Project EIS. Additionally, CSI is in the process of acquiring surface water rights (principally by acquiring irrigation district shares) on the Muddy and Virgin rivers in Clark County. These additional water rights and associated groundwater development will not be included as Covered Activities within the Preferred Alternative.

While an affiliate of CSI has change applications pending before the State Engineer that seek to change the manner and place of use of approximately 20,000 acre-feet of certificated groundwater rights, it is unknown to what extent the requested transfer would be allowed by the State Engineer.

Cumulative effects associated with using 1,000 af appropriated within Kane Spring Valley and up to 20,000 af of certificated alluvial groundwater appropriated within the Lake Valley Basin are addressed in the cumulative effects analysis of groundwater resources. Any further discussion at this time would be purely speculative.

Because the land owned by CSI's affiliate in Lincoln County and the Development Area abut and are surrounded by federal land, no water can be brought into the Development from outside the Development without obtaining one or more right-of-way grants from the Bureau of Land Management. All water that is ultimately delivered to the project area would be subject to full NEPA compliance and Section 7 consultation under ESA.

Resource management features of the Preferred Alternative would include a re-alignment of the existing land ownership and designation of conservation lands. Resource management features would be implemented within the project area. Under the Preferred Alternative, BLM and CSI would reconfigure the layout of the leased and private lands from the existing configuration (Figure 3-2). Under the existing configuration, CSI lease land is an island within the CSI private land. This configuration presents cumbersome management for both the BLM and CSI. Further, development of private land in the existing configuration could isolate desert tortoise and other wildlife within the leased area. The reconfigured layout would consolidate the private land to the west and the lease land adjacent to the BLM ACEC along the east side of the property. Therefore, habitat connectivity between the lease land and BLM ACEC would be maintained as tortoises and other wildlife would be able to move between these lands.

CSI has designated approximately 7,548 acres in Lincoln County and 6,219 acres in Clark County, for a total of 13,767 acres that would be managed by BLM in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species.

Before development would occur, a Tentative Planned Unit Development (PUD) Plan would be prepared and submitted to Lincoln County for approval. This plan would meet the requirements set forth in the Coyote Springs PUD Code, as well as provide more detailed information prior to each phase of development. Components of project permitting would be coordinated and implemented in a programmatic way, with permits issued as development features are finalized and implemented over time. In this way, implementation of the planned community, as well as specific conservation measures, can occur within an adaptive management framework. Figure 3-2 shows the proposed layout of the new town with the land reconfiguration, along with the location of a conservation easements along the Pahranagat Wash and preserved WOUS (a conservation measure discussed below) and the location of the CSICL for the Preferred Alternative.

Under the Preferred Alternative, CSI would develop a Memorandum of Understanding (MOU) with the Nevada SHPO. CSI would abide by all provisions of the MOU with the Nevada SHPO to protect known

cultural resources. The MOU would adopt a programmatic plan for cultural resources that establishes study methods including level of investigation, testing, analysis, and record keeping for implementing these methods within the project area prior to land disturbing activities that may impact or destroy cultural resources. CSI would coordinate with the Corps and the tribes to complete the Section 106 consultation process.

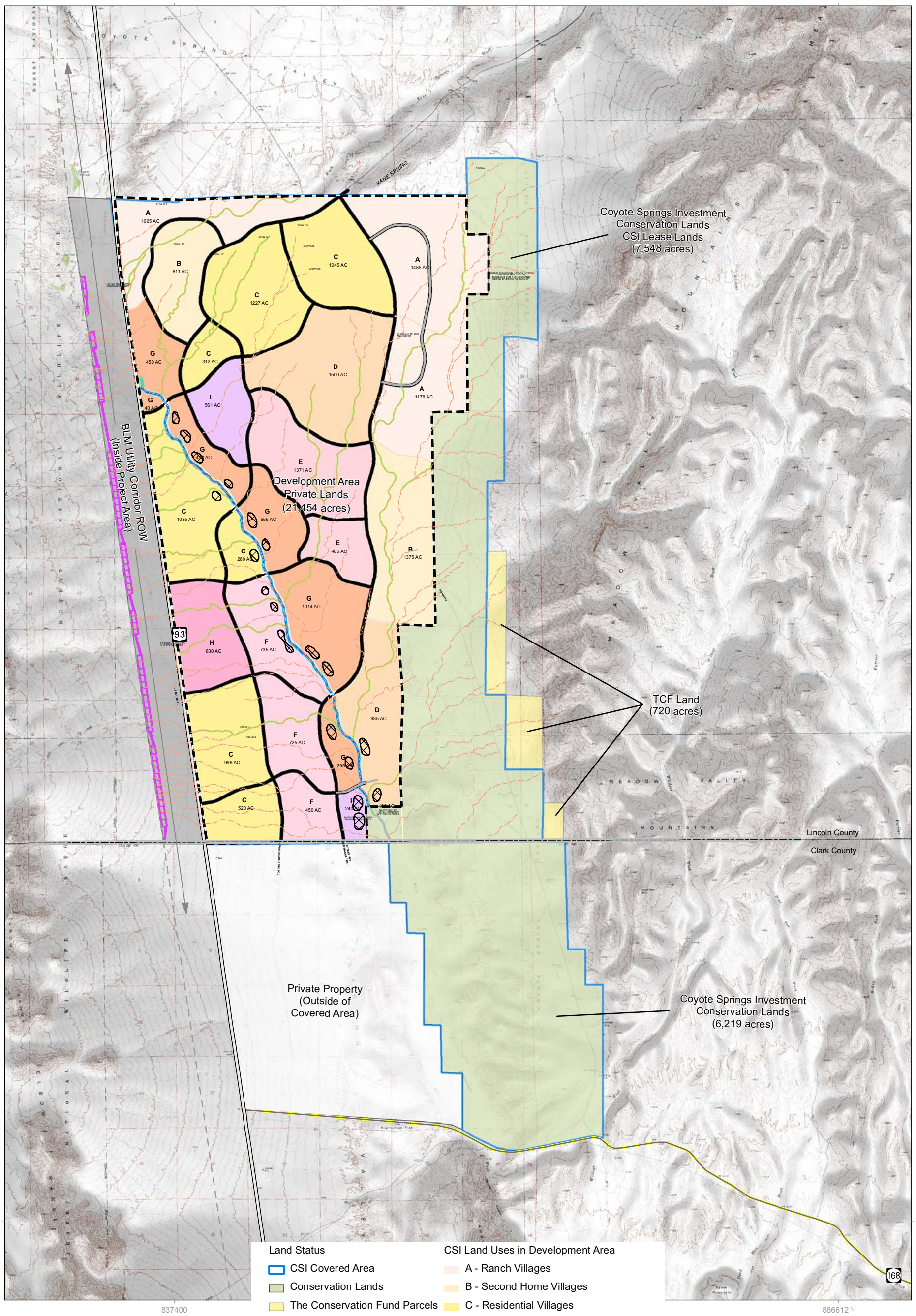
3.2.2.1 Activities Related to the CSI Development

Six general categories of activities listed in Table 3-1 would be associated with establishment, maintenance, and operational features for the CSI Development.

Table 3-1 Summary of Covered Activities for the Preferred Alternative

Covered Activity	Associated Actions
Community Development and Construction Activities	Residential land use Public building land use Hotels and resorts land use Commercial and light industrial land use Roadway construction and maintenance Bridge construction and maintenance Horticultural land use Heliports
Recreational Facilities and Open Space	Golf courses Parks Sports fields Wash corridors/preserves Pedestrian and equestrian trails
Utility Infrastructure	Power (electric and gas) Solar energy Wastewater collection, treatment and disposal Reclaimed water facilities and operations Stormwater facilities Solid waste disposal Telecommunication
Water Supply Infrastructure and Management	Water treatment Monitoring wells Injection wells Production wells – – facilities for production of existing permitted water rights pursuant to the Muddy River MOA or other future Section 7 compliance Storage facilities Distribution facilities Effluent supply use and management On-site disposal of excess treated effluent
Flood Control Structures, including Stormwater Management	Alteration of WOUS Detention and retention basins Stormwater conveyance and treatment (open ditches, pipes) Culvert placement
Resource Management Features	Land ownership re-alignment Coyote Springs Investment Conservation Lands

Some actions associated with the proposed town in Lincoln County, however, have already been or would be evaluated under separate ESA Section 7 consultations, Section 404 permitting processes, and NEPA processes. These actions are not components of the alternative, unless otherwise specified in this section. Certain activities related to delivery of water to the Development Area will be covered by separate ESA consultations. In some cases, these activities may coincide with separate ESA consultations (see Section 1.4: Related Planning Efforts).



Land Status
- CSI Covered Area
- Conservation Lands
- The Conservation Fund Parcels
- BLM Utility Corridor
- Development Area
- WOUS
- 100 Foot WOUS Buffer
- 50 Foot WOUS Buffer
- Detention Basins
- Retention Basins
- County Line
- Highway
- State Route

CSI Land Uses in Development Area
- A - Ranch Villages
- B - Second Home Villages
- C - Residential Villages
- D - Adult Villages
- E - Vacation Villages
- F - Mixed-Use Urban Villages
- G - Open Space Fringe Development
- H - Highway Commercial Villages
- I - Commercial/Industrial Park Villages

0.5 0.25 0 0.5 1 Miles

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Figure 3-2
Configuration of the Preferred Alternative Including Land Uses, Conservation Easements and the Coyote Springs Conservation Lands

ENTRIX

3.2.2.1.1 Community Development and Construction Activities

Community development and construction activities could ultimately result in the conversion of up to 21,454 acres of the Development Area from desert habitat to residential homes and villages, mixed-use urban villages, public buildings, hotel and resorts, recreational, commercial and light industrial areas. Table 3-2 summarizes the different types of development and estimates of the corresponding acreage, in addition to the percent of total development each type of development is anticipated to comprise. Community development activities include land clearing, structure construction, and landscaping activities required for the community.

Table 3-2 Land Use Category and Estimated Percentage Breakdown for Preferred Alternative

Development Type	Percentage of Development	Acreage of Development	Mid-Range Percentage	Acreage
Residential – single family	65 to 80 percent[1]	13,945 to 17,163	72.5 percent	15,554
Residential – multi-family	5 to 10 percent[1]	1,072 to 2,145	7.5 percent	1,609
Commercial and light industrial	5 to 10 percent[1]	1,072 to 2,145	7.5 percent	1,609
Hotels and resorts	2 to 6 percent[1]	429 to 1,287	4.0 percent	858
Open space	5 to 12 percent[1]	1,072 to 2,700	8.5 percent	1,824
Reserve designation (CSICL)	25 percent of Total Acreage[2]	7,548		7,548
Total			**100.0 percent**	**29,002**

[1]Percentage of total development acreage (21,454 acres)
[2]Percentage of total Lincoln County private and leased acreage (29,002 acres)

Development would be phased over a number of years, which would include a limit of 2,000 acres of disturbance per year for the first eight years. An application has been made for a 40-year permit, because that is the length of time anticipated to reach the full buildout of the CSI private lands. It is important to note that this scenario assumes availability of adequate water for the CSI Development. Less development or a delayed timeframe for implementation of this project could occur if water sources are not available. Construction would not occur unless adequate water sources were available at the time. Table 3-3 identifies the approximate areas and acreage to be developed within the 40-year timeframe of the permit. These acreages are based upon the fiscal analysis developed for the CSI Development, but this scenario is an approximation of the general development of the area (Meridian Business Advisors 2007). Construction activities would generally begin in the southwestern corner of the Development Area, along the Clark County border, and expand north- and eastward toward the CSICL. The northeastern portion of CSI private land adjacent to the CSICL would be disturbed last.

Table 3-3 Estimated Location and Amount of Land Disturbance Associated With Community Development Activities

Year	Types of Land Uses	Location	Estimated Acres
0-5 years	Residential Villages (C), Mixed-Use Urban Villages (F)	southwest portion of Development Area	1,257
6-10 years	Mixed-Use Urban Villages (F), Highway Commercial Villages (H)	along U.S. Highway 93 and in southwestern portion of Development Area west of Pahranagat Wash	2,858
11-15 years	Residential Villages (C), Open Space Fringe Development (G), Commercial/Industrial Park Villages (I)	east and west of Pahranagat Wash in Development Area	4,118
16 -20 years	Vacation Villages (E), Commercial/Industrial Park Villages (I)	center of Development Area	4,850
21-25 years	Residential Villages [C], Adult Villages (D), Open Space Fringe Development (G)	north-center of Development Area, along the eastern edge of Pahranagat Wash	3,650
26-30 years	Ranch Villages (A), Second Home Villages (B), Open Space Fringe Development (G)	along U.S. Highway 93 and along east side of Pahranagat Wash	3,023

Table 3-3 Estimated Location and Amount of Land Disturbance Associated With Community Development Activities

Year	Types of Land Uses	Location	Estimated Acres
31-35 years	Ranch Villages (A), Second Home Villages (B), Adult Villages (D)	eastern and northern edge of Development Area	802
36-40 years	Unspecified	Unspecified	158
Total	**All**	**All**	**20,716**

DEVELOPMENT AREA

RESIDENTIAL

Under the Preferred Alternative, residential development would be organized into village types and may consist of single-family and multiple-family dwelling units. Descriptions of these village types are provided in Table 3-4. Five residential dwelling units could be constructed per gross acre. Residential areas would eventually cover approximately 65 to 80 percent of total development and may eventually include 111,000 residential dwelling units, based on the density allowed under the Coyote Springs Development Agreement (County and CSI 2005). If development were ultimately limited to fewer acres than the 21,454 acres, there would be a corresponding reduction in residential dwelling units built.

Table 3-4 Village Types Proposed for Development

Village Type	Description of Village	Lot Size (acres)	Dwelling Units per Acre (DUA)
Ranch villages	Larger residential lots, with equestrian/ranch environment	0.5 – 10+	0.8
Second home villages	Custom home sites for weekend retreats, seasonal and year-round living within recreational environment, abundant amenities	Up to 2	1.5
Residential villages	Affordable primary homes and communities for first time buyers and primary families	2 – 20 DUA	6.0
Adult villages	Senior active lifestyle communities with age restrictions, abundant amenities	2 – 20 DUA	6.0
Vacation villages	Mix of year-round, seasonal and vacation living, and overnight stays	2 – 40 DUA	8.0
Mixed-use urban villages	Community service facilities, neighborhood commercial facilities, employment and residential living combined with small town character setting	-	12.0
Open space fringe development	Border recreational open space corridor within Pahranagat Wash incised ephemeral channel and connected to larger open space corridor that networks community together	20 percent within open space network developed at 2 – 40 DUA	6.0
Highway commercial villages	Quality employment base that serves community and highway corridor	-	8.0
Commercial/industrial park villages	Quality employment base allowing growth of industry and economic stability within community. Residential uses may be included in tentative PUD plan submittals.	-	Unknown

Residential land use zones have been designated in the previously developed Coyote Springs PUD Code and are summarized in Table 3-5. Residential and commercial uses also may be permitted in mixed-use zones (CS-M-U) on a single lot or within a single integrated development on multiple lots.

Table 3-5 Residential Land Use Zones

Land Use Zone Code	Land Use Zone	Description of Zone	Development Density (DUA)
CS-R-U	Rural Open Land Zone	Very low density residential dwellings	0.5 (maximum)
CS-R-E	Rural Estates, Residential Zone	Low density residential use	0.5 (maximum)
CS-R-A	Residential Ranch Zone	Areas suited for equestrian activities, including residential use	1 (maximum)
CS-R-D	Suburban Estates Residential Zone	Low density, single-family residential uses	10,000+ square feet per lot
CS-R-1	Single Family Residential Zone	Single-family residential dwellings	3 – 6
CS-R-2	Medium Density Residential Zone	Compact single-family and two-family residential dwellings	6 – 12
CS-R-3	Multiple-Family Residential Zone	Medium density residential use, including apartments	18 (maximum)
CS-R-4	Multiple-Family Residential Zone	High density residential use, including apartments	25 (maximum)
CS-R-5	Apartment Residential Zone	High density apartment residential use	50 (maximum)

PUBLIC BUILDINGS

Public buildings would be constructed to support the residents of the future community. These may include schools, public library, and public services (e.g., government buildings, fire and sheriff's substations). A temporary, satellite government facility site would be constructed, consisting of at least 2.5 acres, before the 1,000th residential building permit would be issued. Temporary facilities may include a sheriff's substation and related facilities; administrative offices for Lincoln County and other governmental agencies; and a Justice Court facility. A permanent satellite government facility of at least 7.5 acres would be constructed before the 40,000th residential building permit is issued. Permanent facilities may consist of a sheriff's substation and related facilities, administrative offices for Lincoln County and other governmental agencies, and a Justice Court and potentially District Court facilities. These buildings would occur within the mixed-use urban village areas.

The Coyote Springs–Lincoln County Fire Protection and Emergency Medical Service General Improvement District (GID) would provide fire and emergency medical services within the community. If additional facilities were needed, they would be constructed and would be similar in size to facilities that cover a comparable area in Clark County by the Clark County Fire Department.

School sites would be built on a threshold basis as follows:

- Before the first Tentative PUD Plan including residential units would be approved, 15 acres would be reserved for a potential school site, until the site was dedicated or is relocated and/or released.
- When a maximum projected student enrollment reaches 350 students per school site, 10 acres would be reserved for an elementary school site before issuing a building permit for the 1,200th residential unit. The site would remain reserved until it was dedicated or the site was relocated and/or released.
- Thereafter, when a maximum projected student enrollment of approximately 350 students per school site was reached, 10 acres would be reserved for an elementary school site before issuing a building permit for each successive 1,600th residential unit. The site would remain reserved until dedicated or the site was relocated and/or released.
- Once the maximum projected student enrollment of approximately 525 students per school site is reached, 15 acres would be reserved for a middle school site before issuing a building permit for the 2,000th residential unit. The site would remain reserved until it was dedicated or the site was relocated and/or relinquished.
- Thereafter, when a maximum projected student enrollment of approximately 525 students per school site is reached, 15 acres would be reserved for a middle school site before the issuance of the building permit for

each successive 5,300th residential unit. The site would remain reserved until it was dedicated or the site was relocated and/or relinquished.

- When a maximum projected student enrollment of approximately 1,400 students per school site was reached, 30 acres would be reserved for a high school site before the issuance of the building permit for the 2,000th residential unit. The site would remain reserved until it was dedicated, or the site was relocated and/or released.
- Thereafter, when a maximum projected student enrollment of approximately 1,400 students per school site was reached, 30 acres would be reserved for a high school site before the issuance of the building permit for the 12,500th residential unit. The site would remain reserved until dedicated or the site was relocated and/or released.
- Additionally, a maximum of 20 acres would be dedicated for supply warehouse, school bus storage, and maintenance facility purposes for School District use. School facilities that are not owned or operated by the School District may be constructed. These facilities may include private or charter schools, denominational schools, or other school facilities not associated with the School District.

HOTEL AND RESORTS

Hotels, resorts, and casinos have been proposed for development to accommodate future tourism within and around Lincoln County. The exact location of such buildings is yet to be determined, but would be located in the established Resort Zone (CS-H-1). This zone would provide for the development of gaming enterprises, commercial, and mixed use and residential uses compatible with gaming enterprises. The hotels and resorts would comprise approximately 400 to 1,300 acres (4 percent), and the estimated number of hotel rooms would range from 670 in Year five to 5,000 in Year 25. The estimated number of visitors would range from approximately 238,400 guests in Year five to 2,138,000 guests in Year 25. Gross gaming revenues resulting from these visitors, as well as from residents of the CSI community, would range from approximately $20.9 million to $3,307 million over the same time period (Meridian Business Advisors 2006). Non-residential land use zones are described in Table 3-6.

Table 3-6 Non-Residential Land Use Zones

Land Use Zone Code	Land Use Zone	Description of Zone	Area of Site (acres)
CS-C-P	Office and Professional Zone	Office and professional service areas	-
CS-C-1	Local Business Zone	Retail businesses or personal services, serve as convenience to village	< 10
CS-C-2	General Commercial Zone	Accommodate full range of commercial, or mixed commercial and residential areas	> 10
CS-M-D	Designed Manufacturing Zone	Light manufacturing establishments with limited outside activity	< 10
CS-M-1	Manufacturing Zone	Light manufacturing establishments	> 10
CS-M-2	Industrial Zone	Operation of most intense manufacturing and industrial activities	-
CS-P-F	Public Facility Zone	Public buildings, airports, structures, and associated activities; related private buildings, structures, and associated activities	-
CS-O-S	Open Space Zone	Permanent open space, prevent irreversible environmental damage to sensitive areas, provide recreational opportunities, including qualified parks	-
CS-REC	Recreational Zone	Public or private programmed or non-programmed recreational areas, including an amusement park and qualified parks	-
CS-RVP	Recreational Vehicle Park Zone	Provide location and development of sites suitable for temporary or transient lodging in recreational vehicles	-

COMMERCIAL AND LIGHT INDUSTRIAL DEVELOPMENT

Commercial and light industrial development (i.e., warehouses, research facility) could include office/business parks, mixed use commercial/entertainment/recreation/tourism, which could support restaurants, retail and service establishments. Between five and 10 percent of the Development Area (1,100 to 2,300 acres) would be developed for these purposes. Non-residential land use zones are described in Table 3-6.

GREEN BUILDING STANDARDS

The Green Building Partnership, a joint effort of the Southern Nevada Home Builders Association (SNHBA) and the Green Building Initiative of Portland, Oregon (a not-for-profit educational organization), researched and developed the requirements of the voluntary program to direct the efficient use of resources, materials, energy and water, and maximize the indoor environmental quality in new housing.

Green building standards adopted by the SNHBA (2006) would be implemented in the CSI Development Area. These include standards for resource efficiency, energy efficiency, water efficiency, and indoor environmental quality. Operation, maintenance, and homeowner education standards would be applied. Low- or no-volatile organic compound (VOC) indoor paints would be used. A home enrolled in the SNHBA endorsed Green Builder Program would require field verification by a Certified Home Energy Rating System (HERS) rater and would follow home inspection sampling guidelines endorsed by the DOE/EPA and the Residential Energy Services Network (RESNET). Standards for certification and verification of approved HERS raters would be implemented.

ROADWAY CONSTRUCTION AND MAINTENANCE

Under the Preferred Alternative, CSI would construct and maintain, until dedicated to a governmental entity or an owner's association, all internal public and private roadways for the town, including, but not limited to: rights-of-way, drainage facilities, roadway construction, utility installations and modifications, noise attenuation devices, bridging structures, lighting, traffic control equipment and signage, aesthetic improvements, landscaping, and other such features customarily provided in a planned community or town. For any improvements to roadways and intersections within the Development Area, CSI would maintain a minimum Level of Service (LOS) of D as defined in the Highway Capacity Manual (TRB 2000)**.**

The types of improvements and maintenance activities anticipated for existing roads (U.S. Highway 93 and/or State Route 168) would include capacity expansion, additional access points, sealing, weed control, storm drainage repairs, and general repairs. CSI would be responsible for any traffic impacts directly associated with the town that would result in required improvements along U.S. Highway 93 from the southerly county line to the northernmost property line of the Development Area intersecting U.S. Highway 93, as would be required by the Coyote Springs GID. Under the Preferred Alternative, CSI would also be responsible for improvements to any other roadway or interchange required to achieve the minimum level of service (LOS of C) with a maximum service flow rate of 1,900 pc/h/ln (passenger cars per hour per lane). A traffic study and monitoring program would be developed and implemented, in cooperation with NDOT, with improvements paired with traffic count triggers.

BRIDGES

Up to four bridges could be constructed to span the Pahranagat Wash incised ephemeral channel (Figure 3-2). The bridges would, to the extent feasible, be sited, designed, and constructed to minimize or avoid potential impacts to WOUS (Figure 3-3). Bridge construction would be phased, as needed, to support each phase of the development. Additional bridges and/or drainage crossings would likely be required to span some of the east-west washes on both sides of the Pahranagat Wash incised ephemeral channel. Up to 14 major arterial crossings of WOUS would occur with approximately 32 minor arterial crossings of WOUS.

AGRICULTURE

Up to two hundred acres would be set aside for a combination of nursery, sod, and tree farms. A nursery providing native plants and sod farms would be developed and used to supply CSI facilities such as golf courses. Existing CSI nursery operations would be expanded. Chemical pesticides would not be used. Drip irrigation would be used for the facilities.

The CSI nursery would continue salvaging native cacti, yucca, and other plants and collecting seeds from native plants. Under the Preferred Alternative, CSI nursery operations would also contribute to conservation measures through providing opportunities for revegetation with native plants. CSI has entered into a native plant seed collection agreement and a native plant collection agreement with the Springs Preserve, a department of the LVVWD (CSI and Springs Reserve 2005b, 2005a, respectively). In addition, CSI has entered into a Native Plant Salvage agreement with Native Resources Nevada for the purpose of salvaging native plants that will otherwise be lost as a result of surface disturbing activity (CSI and Native Resources Nevada 2006).

3.2.2.1.2 Recreation Facilities and Open Space

Recreational facilities, which may include an amusement park and open space, such as golf courses, parks, sports fields, wash corridors, and trails (i.e., hiking, horseback riding, walking biking) would be constructed and maintained to serve future residents and visitors. Parks, recreational facilities, and open space would be constructed in a phased approach:

- Before the permit is issued for the 1,000th residential unit, 10 acres of parks, recreational facilities, and open space would be constructed.
- Before the permit is issued for the 5,000th residential unit, 50 acres of parks, recreational facilities, and open space would be constructed.
- Before the permit is issued for the 10,000th residential unit, 100 acres of parks, recreational facilities, and open space would be constructed.
- After the permit for the 10,000th residential unit is issued, CSI would construct 50 acres of parks, recreational facilities, and open space before the issuance of the permit for every 5,000th successive residential unit.
- For every 20,000th successive residential unit (and before the permit is issued), CSI would construct a public leisure pool and recreation center (subject to county design approval).

Amenities that may be included in each park, recreational facility, or open space are turf areas, trees, irrigation, playground apparatus, playfields, play areas, picnic areas, and other recreational facilities and equipment designed to serve the residents. CSI could also construct and include stormwater detention basins, drainage channels, and floodways in parks, recreational facilities, and open space, if all required approvals to be obtained. Non-residential land use zones are described in Table 3-5.

Golf courses and sports fields would be sited to avoid impacts to preserved WOUS. It is anticipated that restored WOUS would be incorporated into golf courses and park facilities. The golf courses could have up to 162 holes of golf and related facilities. An additional nine holes of golf and related facilities per each group of 2,000 residential dwelling units (developed or constructed) may be developed, if either: 1) treated effluent were primarily used to irrigate any of the additional holes or 2) CSI were to acquire additional water appropriation permits issued by the Nevada State Engineer and could adequately meet the irrigation needs of the golf course.

Figure 3-3
Typical Roadway Design for Dry Wash Drainage Crossings

3.2.2.1.3 Utility Infrastructure

Under the Preferred Alternative, utilities and other infrastructure would be developed to serve the town in Lincoln County. The following utilities and infrastructure would be developed.

POWER SOURCES

ELECTRIC

Electric power distribution facilities would be developed to support the community, which would include on-site underground distribution lines, related appurtenances, and substations. Once developed, the electric power distribution facilities would be maintained. Off-site overhead transmission lines will not be a component of this alternative.

Two or three electrical power substations would be constructed within the Development Area to deliver electricity to the underground distribution system serving the Development Area. Two of these substations could be constructed adjacent to the east side of the BLM utility corridor. One substation could be within the SE¼ of Section 7, Township 12 South, Range 63 East and the other within the W½ of Section 2, Township 12 South, Range 63 East, MDM, Lincoln County, Nevada. One substation could be constructed approximately 2.5 miles east of U.S. Highway 93 along Kane Springs Road on CSI lands.

NATURAL GAS

Natural gas would eventually be delivered to the Development Area in Lincoln County through a natural gas pipeline addressed under separate ESA and NEPA consultation. This pipeline will be addressed in the cumulative effects analysis of this EIS.

PROPANE

Propane gas would be an integral part to providing energy sources to the CSI Development, on a temporary and/or permanent basis. It would be brought on-site and stored in tanks within the Development Area. This would likely occur until such time that other energy sources could sufficiently meet energy needs within the CSI Development at full capacity.

CSI would also develop, to the extent feasible, the option to develop on-site direct generation using clean and efficient and/or renewable energy technology as described below.

RENEWABLE ENERGY RESOURCES

Renewable energy sources would be considered for on-site energy generation. Because the Development Area has been identified by the BLM as an area of high solar energy production potential, the use of photovoltaic technology in the production of solar power could occur. CSI would encourage the use of solar energy in the development and is designing a set of builder guidelines that would allow different types of solar installations to facilitate the use of solar energy.

DISTRIBUTED ENERGY PRODUCTION

Distributive energy generation sources may be considered for on-site energy production. A mix of currently available and affordable natural gas fueled micro-turbine or internal combustion engine technologies may be used to produce power for use in the Development Area.

WASTEWATER TREATMENT

A sanitary sewer collection system would be installed within the Development Area to convey sewage to the treatment facilities. Pump stations would be used as needed for sewage conveyance.

Two wastewater treatment plants serving Lincoln County would be constructed, using Membrane Bioreactor technology, or similar technology, to provide tertiary treatment and produce effluent of the highest quality. Each plant in Lincoln County will be expandable up to 6.5 million gallons per day (MGD) at build out of the Development Area.

TREATED EFFLUENT STORAGE, DISTRIBUTION, AND DISPOSAL FACILITIES

Effluent reuse, storage and disposal facilities associated with wastewater treatment plants would be constructed under the Preferred Alternative. The effluent would be produced with a carbonaceous biochemical oxygen demand (CBOD) and total suspended solids (TSS) concentration of less than 1.0 mg/l, respectively, and total nitrogen in the range of 5.0 to 6.5 mg/l. This quality effluent would be suitable for reuse on golf courses, nurseries, sod farms, landscape areas, and discharge to surface waters, consistent with NDEP effluent reuse requirements. Effluent would be stored in lined ponds/reservoirs at strategic locations throughout the development for reuse. Reuse facilities would include above-ground storage pond reservoirs; above or below ground reservoirs, conveyance systems; and spray, flood, or drip irrigation systems as appropriate for each site.

If treated effluent were used for irrigation, approximately 35,000 (one-half of total residential and commercial water demand) acre-feet per year (afy) of surface or ground water would be preserved at full build out.

CSI would reuse all effluent to the maximum extent possible without resulting in the waste of water. At some point, there could be treated effluent available that is in excess of what can be used. Excess effluent could potentially be used for groundwater recharge purposes via rapid infiltration basins and injection wells or delivered to SNWA for utilization outside of the Development Area.

STORMWATER FACILITIES

CSI proposes to develop integrated sub-regional stormwater facilities to address the following:

- Off-site alluvial fan stormwater that crosses the Development Area between U.S. Highway 93 and the Pahranagat Wash incised ephemeral channel (WOUS);
- Off-site regional stormwater that originates in Kane Springs Valley and the watershed north of Coyote Spring Valley are conveyed through the Development Area via Pahranagat Wash;
- Off-site alluvial fan stormwater that crosses the Development Area between the eastern boundary of the Development Area and the Pahranagat Wash; and
- On-site stormwater generated from within the Development Area.

Stormwater facilities would be comprised of a variety of structural improvements integrated into the Development Area. These improvements would include the following:

- Curb and gutter
- Roadside ditches
- Vegetated swales
- Drop inlets
- Underground pipes
- Pretreatment vaults/filters
- Detention and Retention ponds or basins
- Infiltration ponds and trenches and
- Temporary construction best management practices (BMPs)

In addition, maintenance of stormwater facilities may include the following activities:

- Inspection of drainage facilities
- Sediment removal from detention/retention basins
- Manual or mechanical channel cleaning, as applicable
- Erosion control

- Drop inlet cleaning
- Storm drain cleaning
- Replace, repair, or install trash racks
- Clean outfalls

Proposed stormwater facilities are described further under Section 3.2.2.1.6: Flood Control Structures Development and Maintenance.

SOLID WASTE DISPOSAL

No landfill would be constructed within the Development Area. Construction debris would be delivered to the nearby private Class III landfill for disposal. For long-term trash disposal, trash transfer stations could be constructed to segregate and consolidate solid waste for shipment off site to solid waste disposal facilities within Lincoln County. A transfer station could be constructed and/or solid waste disposal could occur at the Class III landfill located just west of U.S. Highway 93 at the north end of the Development Area.

TELECOMMUNICATIONS

Currently, two fiber-optic lines border the Development Area in a north-south direction, adjacent to the BLM utility corridor. Under the Preferred Alternative, the Lincoln County Telephone System, Inc. (LCTS), which owns one of these lines, would provide the Development Area with certificated voice telephone service through fiber-optic cables installed in an underground conduit system. This underground conduit system would be installed within easements dedicated for that purpose throughout the Development Area. A venture named Coyote Broadband has been formed by Coyote Springs Land Company LLC (CSLC) to provide video and data broadband services within the CSI Development. LCTS and Coyote Broadband have agreed that the video and data broadband services would be transported over the installed LCTS fiber-optic cables.

3.2.2.1.4 Water Supply Infrastructure and Management

WATER TREATMENT

Initially, there would be a minimum of one raw water treatment plant located east of U.S. Highway 93 to serve the Development Area. The initial treatment facility would be located in the area southeast of the U.S. Highway 93 and Kane Springs Road intersection.

An additional two other treatment plants have been proposed for construction over the course of development. Geotechnical engineers are currently investigating potential locations for placement of the second and potentially third treatment facilities. These future treatment facilities would be constructed in the same general manner as the initial facility, although technological advances that may occur in-between would also be included.

WELL LOCATIONS

Production well sites would be located within the Development Area to develop permitted water rights within the Coyote Spring Basin, as covered under the Muddy River MOA and BO (Appendices A and E) or other future Section 7 compliance. The total number of production wells that may be constructed is unknown at this time. Wells would be constructed in accordance with permits from the Nevada Division of Water Resources, and would be operated, maintained, repaired, and replaced as necessary by CSI/GID or other parties pursuant to CSI's contractual obligations.

Monitoring wells would be constructed, operated, and maintained throughout the Development Area and surrounding areas consistent with the terms and conditions of all applicable permits, rulings and orders of the Nevada State Engineer, and CSI's contractual obligations with third parties. The number of monitoring wells to be constructed would be determined by the Nevada State Engineer prior to permit issuance, provided that the number and location of such wells may be modified from time to time by the Nevada State Engineer. Monitoring wells would be constructed, operated, maintained, repaired and replaced as required or deemed

appropriate by the Nevada State Engineer and CSI/GID (depending on ownership) from time to time, subject to all applicable permit terms and conditions and orders and rulings of the Nevada State Engineer. The exact number of monitoring wells can not be determined at this time. To the extent monitoring wells are located outside the Development Area, they will be addressed in the same environmental documentation that is prepared for the associated production well, pipeline and related appurtenances.

STORAGE FACILITIES

On-site reservoirs would be constructed within the Development Area. These reservoirs would be aboveground or underground tanks, which may either be cement, in-ground tanks or welded steel aboveground tanks. The purpose of these reservoirs would be to store raw, untreated water, to distribute treated water to the community, and to meet the requirement of providing water for fire protection at certain elevations. The average capacity of the tanks would be three to four million gallons. A buried communication line would be installed to operate the valves on the tank(s). Off-site reservoirs may be constructed as well, but if this occurs, separate environmental documentation will occur for those reservoirs outside the scope of this EIS.

LOCAL TRANSMISSION AND DISTRIBUTION FACILITIES

A water delivery system, consisting of wells, pumps, motors, storage facilities, pipelines, telemetry, power line and all related appurtenances would be constructed within the Development Area. This system connects to the Kane Springs Valley Groundwater Development Project, which is covered under a separate ESA consultation and is addressed in the Cumulative Effects section of this document as a cumulative effect. Water provided through this system is separate from and independent of SNWA's regional groundwater project.

The pipeline and related appurtenances to be constructed within the Development Area are covered under this CSI MSHCP. This activity would occur within the same area of disturbance described for community development and construction activities.

WATER CONSERVATION

All effluent would be treated and reused within the Development Area up to the maximum extent practicable without resulting in the wasting of water. At some point, available treated effluent could exceed the reuse demand, at which time such excess could be used for groundwater recharge (subject to all applicable laws and regulations) or be made available to SNWA for its use elsewhere. Up to 50 percent of water used to serve the development in Lincoln County (approximately 35,000 afa) could be reclaimed through water conservation efforts, such as reuse of effluent, drip type or other water conserving irrigation systems, and design of golf course, park space, and streetscape areas to minimize the use of water.

The Green Building Standard adopted by the SNHBA (2006), which would be implemented under the Preferred Alternative, includes several standards for water efficiency:

- Front yard must have water-smart landscaping; no turf.
- Turf and/or swimming pools and spas can only extend across a certain amount of the backyard, depending upon the acreage.
- Certain turfs that require larger amounts of water are prohibited.
- Irrigation systems cannot create flow or spray that will leave the property.
- Irrigation systems must follow a seasonal watering schedule.
- Homes must include high-efficiency indoor plumbing fixtures; there are maximum flow requirements for the faucets and fixtures.
- All air conditioning systems must be non-evaporative systems with zero net consumptive water use.
- Standards include elements of Water Smart Home, a water-efficiency program of the SNWA and the SNHBA.

CSI nursery operations and cooperative agreements would contribute to water conservation efforts. The existing CSI nursery in Clark County is collecting seeds from native plants as well as salvaging native cacti, yucca, and other native plants. This would provide native, xeric plant material for landscaping activities within the Development Area under the Preferred Alternative.

Several of the functions of the Coyote Springs-Lincoln County GID (or successor water purveyor) is to provide certain improvements and long-term facility operations and maintenance and to address water management for the new town. The existing Coyote Springs Development Agreement between Lincoln County and CSI outlines measures to conserve and reuse water within the project area (Appendix F). Under this agreement, CSI would encourage water conservation in the planned community. Landscaping within streetscape areas (street medians and landscaping areas adjacent to roads within the planned community) would use drip type or other water conserving irrigation systems. Design criteria would be imposed on all development within the planned community (by use of recorded restrictive covenants or pursuant to contractual obligations binding on purchasers of property) that would encourage water conservation in landscaping treatments by incorporating water conservation concepts and proven water conservation equipment, techniques, and plant materials. To the maximum extent practical, any golf course, park space and streetscape area would be designed in such a way as to minimize the use of potable water and maximize treated effluent for irrigation purposes, especially during the summer months. This would be subject to CSI's existing or pending water rights as outlined in the Coyote Springs PUD Code. Nuisance water would be collected in retention and detention basins and be reused where possible. No nuisance waters would enter the Pahranagat Wash.

Conservation standards would also be implemented as part of service rules developed for the Lincoln County development under the Preferred Alternative. These service rules would be similar to those rules contained in Section 3: Conservation and Demand Management of the Coyote Springs Water Resources GID Service Rules for Clark County (2007, refer to Appendix F).

As a condition of service, customers would be required to use water delivered through the water system in a manner that promotes efficiency and avoids waste. Based on water supply demands and drought conditions, varying operating conditions would apply. These conditions would restrict customers' use of water as necessary. Customers would be notified of violations and enforcement measures would be taken, if needed. Demand management measures would be implemented (e.g., spray irrigation restrictions, watering schedules, and golf course water budgets).

3.2.2.1.5 Flood Control Structures Development and Maintenance

The desert dry washes on the alluvial fans do not have the capacity to adequately convey floodwaters through the Development Area and could endanger the health, safety, and welfare of residents within the Development Area during a flood event. Some of the desert dry washes would be relocated and enlarged to meet acceptable flood conditions and comply with EPA and State of Nevada stormwater regulations and with Lincoln County requirements for flood control structures and their maintenance. The following elements are included.

ALTERATION OF WOUS

Portions of desert dry washes would need to be filled to construct the proposed town. Unavoidable impacts to WOUS as a result of construction activities are summarized in Table 3-7.

Table 3-7 Proposed Modification to WOUS Under the Preferred Alternative

	Development Area	BLM Utility Corridor	Lincoln County Lease Lands (CSICL)	Total
Potentially disturbed WOUS	28.2	5.1	0	31.7
Avoided WOUS	25.2	0	6.9	32.1
Total Existing WOUS	**51.8**	**5.1**	**6.9**	**63.8**
Restored WOUS	59.8*	0	3.6	63.4
*Includes restoration for WOUS impacted within BLM utility corridor. Mitigation ratio calculated at a 2:1 ratio (restored to impacted).				

To the maximum extent practical, CSI would preserve and maintain the first flow channel within the Pahranagat Wash incised ephemeral channel. As agreed with Lincoln County, CSI may propose facilities and improvements that do not hinder the flow of frequent storm events (10-year storms or less) within the first flow channel. Stormwater from the rest of the development would be routed to stormwater facilities described below to avoid being diverted into the existing first flow channel. This is expected to minimize offsite runoff impacts.

Upon completion of construction, stormwater would be managed through a variety of flood control facilities, including detention basins, constructed washes, and other facilities that collect stormwater and allow sediment to separate from stormwater prior to entering any jurisdictional waterway. Delineation of WOUS within the project area (Development Area, CSI lease land, and the BLM utility corridor) was completed in 2006 (Huffman-Broadway Group and RCI 2006).

3.2.2.2 Detention/Retention Basins

CSI would develop integrated sub-regional stormwater control facilities to address both off-site alluvial fan stormwater that crosses the Development Area and on-site stormwater generated from within the Development Area. Flood storage and conveyance facilities would be constructed both in the BLM utility corridor west of U.S. Highway 93 and within the Development Area. The drainage channels through the project will be hydrologically engineered in accordance with the Las Vegas Valley Flood Control Standards, until Lincoln County adopts their own flood control standards. Las Vegas Valley Flood Control Standards for pre-treatment for hard surface runoff would also be followed, whereby all hard surfaces runoff would be pretreated prior to being discharged off-site. The amount of hardscape would be minimized in the channels to allow for natural bottoms and side slopes, in accordance with USFWS recommendations to maintain natural bottom as habitat and provide for downstream sediment transport, except at high energy points subject to erosion. Where possible, high energy flow points would be hardened using natural materials. Roadways would all be overcrossings constructed using a box culvert system or overcrossing deck set on bridge abutments above ordinary high water.

Flood storage and conveyance facilities within a secondary system of naturalized low flow channels would be designed. Additional flow capacities may be conveyed within a series of appropriately-sized flood control lakes that may be built in conjunction with an Aquifer Recharge Program as described in NRS Chapter 534 to control excess flood flows from the north, west, and east, and the backflow condition from the south of the planned community.

Up to eight detention basins with trash racks and sediment storage for off-site storm flows could be built west of U.S. Highway 93 within the BLM utility corridor, following approval of a right-of-way application that would be filed with the BLM. Potential locations of these basins are shown on Figure 3-2. Stormwater would be collected along the west side of U.S. Highway 93 and conveyed to detention basins as needed to control peak flows and protect U.S. Highway 93, the general public, and drainage improvements. These detention facilities would be designed to address the 100-year flow event for the respective sub-hydrologic basins and subsequently control the peak flows conveyed through the Development Area. The detention basins would help to preserve the highway, which currently is subject to being washed out during heavy storms. These detention basins and associated ditches could affect up to 244 acres within the BLM utility corridor. All detention basins constructed within the BLM utility corridor would not be covered under the CSI MSHCP and associated ESA Section 10 permit, but, rather, would be addressed through Section 7 consultation with the USFWS. The construction of these detention basins is a component of the Preferred Alternative. However, additional NEPA analysis may be necessary for these detention basins, due to the limited amount of information currently available about the number and specific locations and specifications of these detention basins.

Constructed conveyance channels would transport the off-site storm flows from the detention basins through the Development Area. The 10-year event would be conveyed in the low flow channel with over bank flow that varies in width necessary to convey the 100-year storm. These constructed conveyance channels would be constructed, stabilized, and protected from erosion with native rock and revegetated with native plant species (Figure 3-4). Several retention basins have been proposed for construction within the Development Area to retain stormwater generated within the Development Area. The shape and/or final location of these basins are subject to change as the design progresses. The retention basins are designed to retain the 2-year, 6-hour storm volume from the site at build out of the community. The 2-year, 6-hour storm volume generated from within the Development Area would be collected, pretreated, and retained for subsequent reuse or infiltration within the Development Area. This volume would be obtained by creating a series of connected retention basins that in total would have the required retention volume. Stormwater volumes that exceed the 2-year, 6-hour storm event would be released. The storm flows greater than the 2-year event can be handled in several ways, as described below.

First, it is possible that only a portion of the development would experience precipitation during a rainfall event. Therefore, a majority of the flows would be rerouted to a specific retention basin, allowing other retention basins to be underutilized during certain storm events. The purpose of allowing flows to be routed to additional retention basins is to retain as much storm flow as possible. If only one constructed conveyance channel is collecting stormwater run-off and the flow is greater than the 2-year storm, a portion of the storm flows could be retained within the downstream basins that are not receiving storm flow. The routing of these flows out of the retention basins would be done with the use of control weirs placed at elevations, such that basins at the 2-year capacity would outflow at specific points into the Pahranagat Wash incised ephemeral channel, as well as into a collection channel that would route the flows to the next down-gradient retention basin.

The channels and weirs would be lined to prevent erosion during operation. The type and extent of the erosion protection would be determined during the final design of the facilities. Erosion protection may include one or several methods, including rip-rap, waterproof and/or erosion membranes, vegetation, turf reinforcement, gabions, grouted rip-rap, concrete, or other methods. The exact erosion control method would be chosen based on flow velocities and aesthetics.

Additional retention would be provided within the community utilizing various golf course and park lakes. The volume of this retention is dependent on the height of the lake's banks and the water surface elevation at the time of the event.

3.2.2.2.1 Resource Management Features

Resource management features of the Preferred Alternative would include a realignment of the existing land ownership and, subject to BLM's consent, designation of conservation lands.

RE-ALIGNMENT OF EXISTING LAND OWNERSHIP

To minimize impacts to the desert tortoise, CSI and BLM would reconfigure the layout of the leased and private lands from the existing configuration. Under the existing configuration, CSI lease land is an island within the CSI private land. This configuration presents cumbersome management for both the BLM and CSI. Further, development of private land in the existing configuration could isolate desert tortoise and other wildlife within the leased area. The reconfigured layout would consolidate the private land to the west and the lease land adjacent to the BLM ACEC along the east side of the property. Therefore, habitat connectivity between the lease land and BLM ACEC would be maintained as tortoises and other wildlife would be able to move between these lands.

Consolidation of private CSI lands under this configuration would minimize impacts to WOUS, special status species, and their habitat. This layout would preserve the north-south habitat linkage between the Kane Springs ACEC to the north, alluvial fans of Meadow Valley Mountains to the east, and the Arrow Canyon Range to the south. Habitat linkages between conserved lands in Lincoln and Clark counties are preserved by consolidating land in the CSICL to the east of the Development Area. Habitat linkages within the CSICL also would be maintained with property that is currently being managed by TCF located southeast of the Development Area.

In addition, with the land reconfiguration, areas determined to have high densities of desert tortoise (within the CSICL and easternmost portions of the Development Area) would be protected, while areas with lower densities would become available for development (K&LA 2000). This would minimize the overall impact to desert tortoise.

COYOTE SPRINGS INVESTMENT CONSERVATION LANDS

Subsequent to the land adjustment described above, BLM would manage the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species. The CSICL would be designated as a natural reserve area subject to limited use authorized in accordance with "The Lease."

Within one year of permit issuance, a management plan would be developed for the CSICL. Development and implementation of the plan would be by CSI in consultation with USFWS. Included in this management plan would be the following provisions:

- OHV use would be prohibited in the CSICL, except for special circumstances for federal, state, and local agencies.
- Non-motorized trails derived from existing roads and trails would be available to the public, with access from the Development Area.

Issues to be addressed by this plan would include, but not be limited to: recreation trails, weed and fire management, law enforcement, litter management, and restoration. Separate Section 7 consultation and potentially NEPA analysis on these activities may be required, because the specifics of this management plan are not known at this time.

3.2.2.3 Conservation Measures

A number of conservation measures would be undertaken in this alternative in order to minimize effects to Covered Species and WOUS. Conservation measures could occur on lands within the Development Area, CSICL, or on federal lands. Conservation measures can be categorized into three groups: avoidance, minimization, and mitigation. Avoidance measures avoid the potential effect. Minimization measures reduce the potential effect to lesser levels over time. Mitigation measures compensate for the potential effect after avoidance and minimization measures have been considered. A summary of the conservation measures specific to the Preferred Alternative for WOUS is provided below (Table 3-8).

3.2.2.3.1 Waters of the United States Conservation Commitments

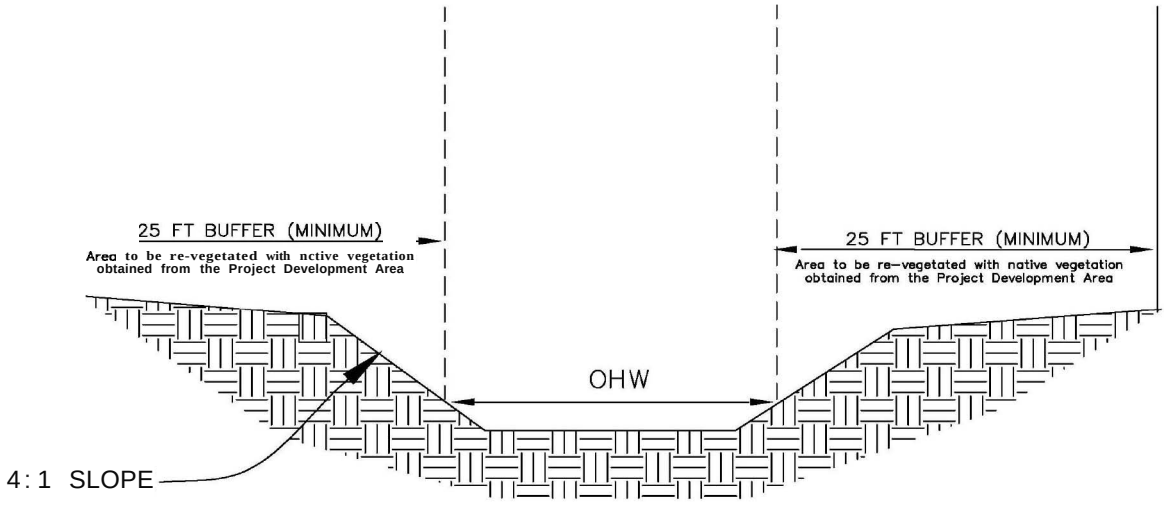
As part of the mitigation for fill impacts to the WOUS, CSI would restore and/or expand the following types of washes:

- adjacent historical washes that were cut off when U.S. Highway 93 was constructed in the 1960s, and
- washes that were filled with alluvium through normal geologic processes.

These washes would be restored to a natural configuration providing desert dry washes of a size that results in stormwater conveyance that meets Lincoln County standards. These drainages would be reinforced with erosion control measures, utilizing native materials when feasible.

Table 3-8 summarizes the conservation measures for WOUS. The avoided WOUS and upland buffer habitat would reduce the total acreage in which activities could occur on to 20,716 acres within the Development Area (21,454 acres less 25.2 acres of protected existing WOUS and 712.5 acres of associated upland buffer habitat).

SECTION VIEW



NOT TO SCALE

Figure 3-4
Typical Design for Created
Dry Wash Drainage

Table 3-8 Avoidance and Mitigation Measures for WOUS Under the Preferred Alternative

	Development Area	BLM Utility Corridor	Lincoln County Lease Lands (CSICL)	Total
Restored WOUS	59.8	0	3.6	63.4
Avoided WOUS protected in an easement or conservation lands	25.2	0	6.9	32.1
Total WOUS protected in an easement or conservation lands	**85.1**	**0**	**10.5[a]**	**95.6**
Upland buffer habitat for preserved, existing WOUS (100 ft. on each side)	712.5	0	0[b]	712.5
Upland buffer habitat for preserved WOUS (30 ft. on each side)	67.4	0	0[b]	67.4
Total Upland Buffer Habitat for preserved WOUS	**779.9**	**0**	**0[b]**	**779.9**
Total acreage of Perpetual Conservation Easement Grant or Drainage and Maintenance Easement (protected, avoided WOUS, restored WOUS, upland buffer habitat)	**864.8**	**0**	**0[b]**	**864.8**

[a]protected in CSICL
[b]located within areas where preserved and restored WOUS and surrounding upland habitat lands would be protected in the CSICL

AVOIDANCE/MINIMIZATION MEASURES

Under the Preferred Alternative, the CSI Development would avoid 32.1 acres of impacts to desert dry washes existing within the project area. No wetlands or other type of EPA special aquatic habitat occur within the Development Area (see Appendix H). The project has been designed to avoid and minimize direct impacts where practicable. Avoidance measures to protect habitat in WOUS would include the following:

- Implement a 100-foot setback from the top of the bank, Pahranagat Wash incised ephemeral channel within the Development Area, consistent with the Section 404 permit.
- Any activity occurring adjacent to the Pahranagat Wash incised ephemeral channel would be done in compliance with Corps regulations to minimize impacts to WOUS.
- Create protective upland buffer habitat on each side of a preserved desert dry wash, consistent with the Section 404 permit.

Minimization measures to protect habitat in WOUS would include the following:

- A Storm Water Pollution Prevention Plan in accordance with Section 402 of the Federal CWA and any State/local requirements would be implemented during construction to minimize impacts to water quality. The Coyote Springs Storm Water Management Plan (SWMP) would be implemented for the Development Area, to guide implementation of elements required for Small MS4s (SMS4s) for NPDES coverage. A copy of the plan is provided in Appendix I.
- Contractors would be required to use standard erosion control BMPs, including silt fencing, sediment traps, vegetated buffers, sand filters, grassed filter strips, bio-retention structures, soil roughening on graded sites, and earthen perimeter dikes, near ephemeral washes and disturbed sites to control sediment generation and transport.
- Avoid construction on approximately 13,767 acres of protected land in CSICL, which includes approximately 6.9 acres of WOUS.
- Constructed washes would have natural vegetation. On-site personnel would monitor these areas during construction.

MITIGATION MEASURES

As part of the mitigation for fill impacts to the WOUS, CSI proposes to restore 63.4 acres of WOUS that would meet the Corps criteria for waters of the United States, i.e., possess an ordinary high water mark.

These washes would be restored to a natural configuration providing desert dry washes of a size that results in stormwater conveyance that meets Lincoln County standards. These drainages would be reinforced with erosion control measures, utilizing native materials when feasible.

WOUS EASEMENTS

Implementation of a Mitigation Plan for impacts to WOUS (Appendix J) would include some or all of the following mitigation measures. These mitigation measures would also benefit the Moapa dace and Virgin River chub.

- Placing a Perpetual Conservation Easement Grant on preserved desert dry washes and upland buffer habitat for preserved desert dry washes. A Drainage and Maintenance Easement would be placed on restored desert dry washes, which would allow for maintenance of restored WOUS and adjacent facilities. These easements would include environmental restrictions related to activities authorized by the Corps and within the mitigation area such as:
  - Avoiding construction activities on 32.1 acres of desert dry washes (WOUS) within the Development Area (25.2 acres) and lease lands (6.9 acres);
  - Preserving 712.5 acres of protective upland buffer habitat adjacent to preserved desert dry washes. The upland buffers would consist of: 1) a 100-foot-wide buffer on each side of all preserved WOUS including the Pahranagat Wash; and 2) a minimum range of 40 to 80 feet on each side of all restored desert dry washes to buffer WOUS from surrounding development activities;
  - Restoring 63.4 acres of desert dry washes (WOUS) within the Development Area (59.8 acres) and lease lands (3.6 acres); and
  - Once mitigation success criteria have been met, the management responsibility for this easement on preserved washes would be assumed by the grantee of the conservation easement. The grantee would be a Corps-approved entity or organization with demonstrated experience in managing lands as a conservation easement grantee. The Corps would be established as a third party beneficiary to ensure that the area remains as an open space preserve in perpetuity.

COMPENSATION

Implementation of this Mitigation Plan will result in the restoration of 63.4 acres of desert dry wash habitat within the Development Area (59.8 acres) and lease lands (3.6 acres) as compensation for 31.7 acres of direct impacts to WOUS within the Development Area (26.6 acres) and BLM Utility Corridor (5.1 acres). This would be accomplished by:

- Restoring desert dry washes so as to provide a net increase in fully functional, self-sustaining desert dry washes having habitat functions and associated values similar to those present on-site prior to the onset of project construction;
- Providing for contingency measures in case desert dry wash restoration efforts fail to meet success criteria; and
- Providing financial guarantees for an agency-required five-year monitoring period, five-year short-term maintenance program, and erosion control measures during implementation.

ACQUISITION AND PRESERVATION

A total of 95.6 acres of desert dry washes would be preserved under the Preferred Alternative. The following is a summary of the lands preserved:

- preservation of 59.8 acres of restored desert dry wash habitat within the Development Area,
- preservation of 25.2 acres of existing desert dry wash habitat within the Development Area,
- preservation of 3.6 acres of restored desert dry wash habitat within leased lands, and
- preservation of 6.9 acres of existing desert dry wash habitat within leased lands..

OTHER MEASURES

The Preferred Alternative would provide the following additional measures:

- A Long-Term Protection Plan, which would include "in perpetuity" management to include periodic maintenance inspections (conducted quarterly or annually) and maintenance, if necessary, and
- A Perpetual Conservation Easement Grant would be placed by the land owner/Corps Permittee on preserved desert dry wash habitat and upland buffer habitat for preserved desert dry wash habitat. This area will be called the Coyote Springs Preserve. The Conservation Easement would include environmental restrictions related to activities authorized by the Corps within the mitigation area. Once mitigation success criteria have been met, the management responsibility for the site will be assumed by the Grantee of the Conservation Easement. The Grantee would be responsible as the Conservation Easement Manager for assuring long-term protection of the site in accordance with the Conservation Easement agreement. It is anticipated that The Conservation Fund (TCF) would function as the Conservation Easement Manager; alternatively, another third party grantee acceptable to both the Corps and CSI would fulfill this function. The Grantee will be funded by an endowment provided by the Corps Permittee.
- A Drainage and Maintenance Easement would be placed by the land owner/Corps Permittee on restored desert dry wash habitat and protective upland buffer. The Drainage and Maintenance Easement would include environmental restrictions related to activities authorized by the Corps within the mitigation area including maintenance and repair and open space use of the upland buffer as long as the buffer provides water quality protections. Once mitigation success criteria have been met, the management responsibility for the site would be transferred to the Coyote Springs Charter Community Association Inc (CSCCA) , a Nevada non-profit corporation), and funding for in-perpetuity management and maintenance will be provided by a General Improvement District (GID) and/or Homeowner's Association(s). The CSI Restored Habitat Manager would be the point of contact regarding management of the restored WOUS in accordance with Corps permit conditions. The CSCCA Restored Habitat Manager would be the point of contact once mitigation has been determined successful by the Corps.

3.2.2.3.2 Moapa Dace and Virgin River Chub Conservation Commitments

CONSERVATION MEASURES

Conservation measures for potential effects to Moapa dace and Virgin River chub would be the same measures described for WOUS above.

3.2.2.3.3 Desert Tortoise, Banded Gila Monster, and Western Burrowing Owl Conservation Commitments

Conservation measures to benefit desert tortoise, banded Gila monster, and western burrowing owl are listed below.

AVOIDANCE AND MINIMIZATION MEASURES

LAND DEVELOPMENT AREA SURVEYS, CLEARANCE AND TRANSLOCATION

All land subject to development would be surveyed and cleared of desert tortoise prior to ground disturbing activities. This would avoid the potential effect of direct mortality resulting from construction activities. It is anticipated that desert tortoise(s) removed during clearance surveys would be used in conjunction with science-based research projects funded as a mitigation measure under the MSHCP and described below. The data collected (i.e., location of all tortoises and tortoise signs, habitat characteristics, physiognomy of the cleared areas, burrows collapsed, health of individuals, record of individuals that were translocated, etc.) would help determine the status of the desert tortoise and its habitat in this area.

The tortoises cleared from this area would be kept in separate desert tortoise holding facilities, which include the Desert Tortoise Conservation Center (DTCC) and, as an option, the Coyote Springs Conservation Center (CSCC), to be located on CSI private lands. Facilities at CSCC could include structures for temporary holding

of individual tortoises, longer-term holding of groups of tortoises, and part of the head-starting program. The responsibility of CSI would be limited to providing funds for the construction and maintenance of the facility. Funds for the construction of the CSCC would be supplied from the CSI MSHCP. ESA compliance associated with the operation of the facility would be the responsibility of the researcher operating the facility.

Only qualified and USFWS-authorized biologists or individuals trained in appropriate methods of handling desert tortoises would survey for and handle desert tortoises during pre-construction tortoise clearance surveys. The HCP Administrator (see Chapter 8: Plan Implementation in the CSI MSHCP) in consultation with the USFWS would choose the surveyors used for this effort.

All land subject to development would be surveyed prior to ground disturbance activities and banded Gila monsters translocated to suitable areas, in consultation with NDOW (NDOW 2007). This would likely avoid the potential effect of direct mortality resulting from construction activities. Data from surveys (e.g., health of individuals, location of individuals, burrows collapsed, individuals moved, etc.) would be collected and recorded.

All land subject to development would be surveyed prior to tortoise clearance surveys and ground disturbance activities for western burrowing owl and their burrows. Data from surveys (e.g., health of individuals, location of individuals, burrows collapsed, etc.) would be collected and recorded. Measures contained in USFWS Nevada Fish and Wildlife Office guidance (USFWS 2007) would be implemented as follows:

- Even though burrowing owls are often active during the day, burrows, cracks, and crevices would be checked before beginning construction. A fiber-optic scope or remote mini-camera would be used to look into a burrow to determine the presence of owls or nests. Owls and eggs would be confirmed not to be present in burrows before grading can commence, to avoid burying them.
- In southern Nevada, owls breed from about mid-March through August. If a burrow has an active nest, the site must be avoided until the chicks have fledged. To ensure that birds would not abandon the nest, a buffer of at least a 250-foot radius would be placed around the burrow, within which no construction should occur. It takes a minimum of 74 days from when eggs are laid until chicks are able to fly (fledge). After the young have fledged, the nest burrow would be checked for any owlets before resuming construction.

In addition, all potential owl burrows seemingly unoccupied by scope inspection would be carefully collapsed to locate any possible owls. Where construction of the area is imminent and fiber-scopes are ineffective, a complete removal by digging back to the end of the burrow and associated intricate system of burrows may be necessary. In the event of a displacement, appropriate depositories of owls discovered should be determined beforehand.

BEST MANAGEMENT PRACTICES FOR CONSTRUCTION, OPERATIONS AND MAINTENANCE ACTIVITIES

BMPs are proposed for ground disturbance activities, sediment and erosion control, and water quality. These BMPs would help address the following potential effects: mortality resulting from construction; predators attracted to trash from construction activities; and increased mortality due to toxicosis.

GENERAL SITE MEASURES

- An environmental education program, including a desert tortoise education program, has been developed and approved by USFWS, would be presented to all personnel who would be on-site, including surveyors, construction engineers, proponent employees, contractors, contractors' employees, supervisors, inspectors as development commences. This program would include a presentation of the NDOW banded Gila monster protocol (NDOW 2007). Qualified biologists or individuals trained in appropriate methods of handling desert tortoises shall act as biological monitors and be present on-site during construction and project-related activities for the protection of desert tortoise, banded Gila monster, and western burrowing owl. All biological monitors shall be approved by the USFWS to handle desert tortoises and other Covered Species. For banded Gila monster, NDOW would be contacted in the event that a banded Gila monster needed to be moved out of harm's way. Banded Gila monsters would be cleared opportunistically as encountered during tortoise and burrowing owl clearance surveys. The number of biological monitors required would be determined by the HCP Administrator in consultation with the USFWS.

- Project personnel shall be notified that they are not authorized to handle or otherwise move federally-listed species encountered on the site. Instead, project personnel shall immediately inform an on-site biological monitor or individual trained in appropriate methods of handling desert tortoises whenever a desert tortoise is observed on or near the construction site or in the path of construction activities. The biological monitor or trained individual would inform project personnel on how to proceed and/or would move the desert tortoise out of harm's way.
- All employees shall be instructed that their activities shall be confined to locations within areas previously cleared of tortoise and western burrowing owl.
- Travel routes within the project area should be established, cleared of desert tortoise and western burrowing owl, and clearly marked prior to construction in any particular area. In areas not cleared of desert tortoises and burrowing owls, and enclosed with tortoise exclusion fencing, cross-country vehicular travel (including that of survey crews) shall only occur after the route has been cleared by a qualified biologist/biological monitor.
- Existing routes of travel shall be used whenever possible. To the extent possible, previously disturbed sites within the project area shall be used for the stockpiling of excavated materials, storage of equipment, digging of borrow pits, parking of vehicles, and any other surface-disturbing activity. Any routes of travel on site that require construction or modification and have not been cleared of cleared of tortoises and western burrowing owls shall have a qualified biologist(s) and/or individuals trained in appropriate methods of handling desert tortoises survey the area for the species prior to modification or construction of the route.
- During construction, a speed limit of 15 mph shall be maintained in areas not cleared of tortoises and fenced with desert tortoise exclusion fencing. In areas cleared of tortoises and fenced, the speed limit can be increased to 25 mph. This requirement should reduce dust and allow a safe speed at which personnel can observe desert tortoises in the road. Speed limit signs and caution signs indicating the presence of desert tortoises shall be posted at the beginning of any access road within areas not cleared of tortoise and enclosed with desert tortoise exclusion fencing.
- Any time a vehicle is parked in an area not enclosed with desert tortoise exclusion fencing, whether the engine is engaged or not, the ground around and under the vehicle shall be inspected for desert tortoise, banded Gila monster, and western burrowing owl. If an individual is observed, an authorized biologist or an individual trained in appropriate methods of handling desert tortoises shall be contacted for instructions on how to proceed.
- Project activities that may endanger a desert tortoise, western burrowing owl, or banded Gila monster shall cease if these species are found in harm's way. Project personnel shall contact the on-site biological monitor for instructions on how to proceed. Project activities shall resume after a qualified biologist or an individual trained in appropriate methods of handling desert tortoises and burrowing owls removes the tortoise or burrowing owl from danger or after the tortoise or burrowing owl has moved to a safe area on its own. For banded Gila monster, NDOW would be contacted in the event that a banded Gila monster needed to be moved out of harm's way.
  - Up to 2,000 acres per year may be disturbed by construction activities for the first eight years.

GROUND DISTURBANCE ACTIVITIES

Before construction commences, environmental sensitivity training regarding protected habitats and sensitive species would be conducted for all individuals who would be involved in the construction, operation, and/or maintenance activities associated with the Development Area.

For ground disturbance activities, the following BMPs would be implemented:

- Identify and clearly mark all vehicle access routes, equipment staging areas, and excavated material stockpile areas.
- Preserve natural vegetated buffers or construct temporary vegetated buffers, if needed.

- Practice construction site waste management, including: 1) cover trash containers; 2) frequent scheduled collections; 3) place oil and fuel products in a covered area with dikes in place to contain spills during refueling; 4) immediately clean up spills; and 5) place vehicle washing and maintenance areas in appropriate areas where untreated discharges can be captured.
- During construction, no storage of equipment or construction materials or refueling of equipment or vehicles within 100 feet of a wash system whose runoff has the potential to enter Pahranagat Wash incised ephemeral channel.
- Report any fuel, transmission, or brake fluid leaks or hazardous waste leaks, spills, or releases immediately to the EC, and to NDEP if greater than 25 gallons or three cubic yards of contaminated material and/or groundwater. All leaks and spills shall be stopped and repaired immediately and cleaned up at the time of occurrence. All heavy equipment and vehicles shall carry a bucket and pads to absorb leaks or spills. Contaminated soil shall be removed and disposed of at an appropriate off-site facility.
- Sequence construction to avoid large expanses of graded, vacant land.
- Apply additional weed management BMPs (see Weed Management Plan below).
- Confine the area of disturbance associated with the development of the CSI community to the Development Area. This includes the location of stockpiles, staging and storage areas, turnaround sites, maintenance areas, and all pre-construction activities such as surveys and flagging of work areas.
- Prohibit cross-country vehicular travel (i.e., off established roads) on reserve lands or CSI lands in Lincoln County not cleared of tortoise or western burrowing owl.

SEDIMENT AND EROSION CONTROL

A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and submitted to the Corps for approval. Contractors and subcontractors would be given a copy of the SWPPP and required to follow the BMPs to prevent sedimentation or erosion in existing desert dry washes:

- Place sterile (certified weed-free) straw on bare soil areas following construction. Certified weed-free straw bales or straw rolls, silt fences, or other suitable barrier material to prevent sediments from entering habitats adjacent to areas being graded can also be used.
- Cease work within 50 feet of area immediately if soil or sediment becomes deposited in a preserved desert dry washes, or in the event of accidental excavation or motor vehicle access through a preserved desert dry washes. If the activity was conducted in preserved desert dry washes (WOUS), CSI would immediately notify the Corps to determine what corrective action needs to be taken. Corrective actions likely would involve removal of the soil/sediment or repair of the damaged habitat using hand tools whenever possible. Such measures would be conducted under the supervision of the HCP Administrator. The land surface would be restored to original grade and erosion control measures implemented as appropriate. If the activity is conducted in desert dry wash where restoration is ongoing, CSI can proceed with corrective action as described above without notifying the Corps. Appropriate erosion control actions would also be taken, such as stabilizing the bare ground area with sterile straw mulch or other appropriate measures, as necessary.

WATER QUALITY

Staging areas for intermittent construction equipment should be located away from WOUS to avoid possible leakage from equipment into the dry wash channel. As with ground disturbance activities, place oil and fuel products in a covered area with dikes in place to contain spills during refueling; immediately clean up spills; and place vehicle washing and maintenance areas in appropriate areas where untreated discharges can be captured.

FIRE CONSERVATION MEASURES

Fire conservation measures would be coordinated and implemented for the developed areas and for the undeveloped reserve areas.

FIRE CONSERVATION MEASURES FOR THE DEVELOPED LANDS

Develop and implement fire conservation measures for the developed areas in coordination with the appropriate federal, state, and county agencies. These measures would focus on using roadways, infrastructure, and golf courses to keep fires from within the community from spreading to adjacent reserve and BLM lands and vice versa.

All development would be required to meet with National Fire Codes and adopt Lincoln County ordinances with regards to community design aspects including:

- building construction and spacing,
- road construction and design,
- water supply, and
- emergency access.

Development plans would require defensible space as per University of Nevada, Reno guidelines as land is cleared, and before homes are built.

Coordination among local, state, and federal fire suppression agencies is important in day-to-day fire prevention activities and becomes critical in the event of a wildland fire. CSI coordination would include promotion of the community forming a local chapter of the Nevada Fire Safe Council, and ensuring that residential addresses are visible from the road. Address visibility is important to the navigation of unfamiliar neighborhoods for rescue and suppression personnel during a wildfire event.

There will be an aggressive community outreach program regarding long-term community defensible space practices. These practices are the responsibility of the individual property owner and include the following:

- Maintain vegetation around homes. This area should be kept:
  - **Lean.** Only small amounts of flammable vegetation,
  - **Clean.** No accumulation of dead vegetation or other flammable debris,
  - **Green.** Plants are healthy and green during the fire season.
- Immediately remove cleared vegetation to an approved disposal site when implementing defensible space treatments. This material dries quickly and presents a fire hazard if left on site.
- Where red brome or other annual grasses have become dominant within the defensible space, vegetation should be mowed or treated with an application of pre-emergent herbicide prior to seed set. Mowing may need to be repeated the following year to ensure that the seed bank of unwanted grasses has been depleted.
- Clear and maintain vegetation and combustible materials for a minimum distance of 10 feet around propane tanks.
- Store firewood a minimum distance of 30 feet from structures.
- Install and maintain spark arrestors on chimneys.
- Mow or remove brush growing against wood fences.
- Maintain the area beneath unenclosed wood decks and porches free of weeds and flammable debris.
- Remove leaves and debris from roofs and rain gutters.
- For deciduous and coniferous trees within the defensible space of a home, maintain branches to be clear for a minimum of four feet from the ground to reduce ladder fuels. Remove all dead and diseased branches and duff from beneath the remaining trees.
- Prune tree branches to be clear for at least 15 feet from chimneys, walls, and roofs of structures.

- Irrigate all trees and large shrubs near structures to increase their fire resiliency. This is especially important during droughty conditions.
- The fire department would be available to provide courtesy inspections of residential defensible space measures.
- Fuels maintenance is necessary to ensure that fire fighters have access into areas to fight a fire or defend a property. Firebreaks are necessary to slow the advance of a fire and protect resources or structures from a fire. The firebreaks aid in keeping access roads open. Firebreaks would be maintained to allow fire suppression equipment into access and to provide an evacuation route if the need arises.
- Individual landowners would be required to maintain fire-resistant species for at least 10 feet from both sides of private driveways longer than 200 feet.
- Maintain areas within 10 feet of all fire hydrants for visibility and access for fire personnel.
- Maintain a defensible space clear of all vegetation a minimum 30 feet from the fencelines of all electrical transfer stations.
- Public education to make communities more fire safe is critical. Informed community members would take the initiative required to lead efforts of a scale sufficient to effectively reduce the threat that wildland fires present to the entire interface community.
- Copies of the publication "Living with Fire" would be distributed to all property owners. This publication is free of charge. Copies can be requested from the University of Nevada Cooperative Extension, (775) 784-4848.

FIRE CONSERVATION MEASURES FOR THE RESERVE LANDS

Implement an aggressive weed abatement program for *Schismus* and *Bromus* species as directed by the CSI Technical Steering Committee (see Weed Management Plan, an appendix to the Mitigation Plan in Appendix J).

To reduce the potential effects of fire to desert tortoise, banded Gila monster, and western burrowing owl habitat in the CSICL, the fire department should meet annually with the BLM to discuss their pre-attack plan for the community and surrounding area.

Develop additional conservation measures through close coordination with the federal agencies and the adaptive management program.

TRASH MANAGEMENT

Trash would be maintained at all times in covered, sanitary containers approved for such use by Lincoln County or in enclosed areas designed for such purposes. All trash would be hauled off-site for disposal. No rubbish or debris of any kind would be allowed to accumulate anywhere in the project area.

During construction, trash and food items shall be disposed of properly in predator-proof containers with re-sealing lids and removed regularly to reduce attractiveness to opportunistic predators such as ravens, coyotes, and feral dogs. This trash would be disposed of properly in an approved landfill. Trash includes but is not limited to, cigarettes, cigars, gum wrappers, tissue, cans, paper, and bags. Upon completion of individual structure or activities in an area, all construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes, shall be removed from the site and disposed of properly.

CONSERVATION EDUCATION

The Coyote Springs Charter Community Association, Inc. has the power and the duty to pay for and obtain educational materials, facilities, projects, or programs as deemed necessary or appropriate for providing education opportunities about the local desert environment, the plant and animal species residing therein, and their habitat needs.

PET MANAGEMENT

Domestic animals occurring within the project area must be kept in an enclosure or an enclosed yard on or in a Lot or Condominium in the Development Area. When not on a Lot or Condominium, all animals other than horses must be kept on a leash or other restraint being held by a person capable of controlling the animal and only in designated areas, such as a fenced dog park. This measure includes cats; cats must not be allowed to freely roam. Horses can be kept and maintained in an equestrian riding and boarding facility in the Development Area, if such a facility were to be constructed, or on Ranch Estate Lots. In addition, domestic sheep, goats, and camelids would be prohibited in the CSI Development.

Pet desert tortoises also would not be allowed in the Development Area. Unauthorized desert tortoise (*Gopherus agassizii*) pets (e.g., all desert tortoise pets that have not been formally adopted through an agency administered desert tortoise conservation center) are prohibited within the Development Area. CSI or the Master Owners Association would contact the USFWS in the event they become aware of an unauthorized pet tortoise within the Development Area. The USFWS would either directly or indirectly through an agreement with NDOW pick up the unauthorized pet tortoise and cause it to be delivered to either the DTCC or the CSCC.

In the event a wild desert tortoise (*Gopherus agassizii*) (any tortoise not confined within or on private property) is found within the Development Area, CSI or the Master Owners Association would contact their approved contractor pick up service to arrange the pick up of the wild desert tortoise and its delivery to either the DTCC or the CSCC.

PERMANENT DESERT TORTOISE EXCLUSION FENCING

The north and east boundaries of the Development Area would be permanently fenced. The type of fencing would vary from stone to metal to stucco to wood materials to be architecturally compatible with the adjacent development. Permanent tortoise exclusion fencing or other tortoise-proof barriers (as approved by the USFWS and CSI) would be inspected at least quarterly (more frequently during the desert tortoise active season) and after major precipitation events. This inspection would involve checking to see that there is proper tension in the wire or fencing parts; the wire, wood, stucco or metal grill work is not broken to create gates for human passageways; and appropriate post alignment and stability is maintained. All fence damage would be repaired in a timely manner and according to guidelines in the *Recommended Specifications for Desert Tortoise Exclusion Fencing* to prevent tortoises from moving through damaged sections.

WEED MANAGEMENT PLAN

Conversion of undisturbed desert habitat to human uses has the potential to increase the incidence of non-native weed species into wildlife habitat. A Weed Management Plan (RCI 2006) would be implemented to reduce the spread of weed species to the CSICL and to land surrounding the Development Area. In addition to the noxious weed control measures included in the Weed Management Plan, invasive grasses (e.g., fountain grass), would be excluded from landscaping. Implementation of the Weed Management Plan would reduce the potential effects resulting from non-native plants. Refer to the Weed Management Plan in Appendix J for a detailed description of the policies and objectives that would be implemented as part of the plan.

OFF-HIGHWAY VEHICLE [OHV] USE

To further reduce potential effects of these activities on desert tortoise, banded Gila monster, and western burrowing owl, all terrain vehicle (ATV) and OHV users would not be able to access trailheads directly from the CSI development on private lands in Lincoln County. Motorized vehicles will be prohibited from being used in the CSICL, except for specific access for federal, state, and local agency needs. In the Development Area, ATVs or OHVs would only be allowed on roads designated for such use, if any. Enforcement of CCRs regarding OHV use would ensure that regulations are followed.

All lands surrounding the project area are managed by the BLM and/or USFWS and are subject to the use regulations, rules, and policies of the BLM and/or USFWS, respectively. CSI would encourage the BLM to prohibit use of ATVs or OHVs on lands adjacent to the Development Area and CSICL. The Master Association would also provide information on nearby OHV parks in Clark and Lincoln counties and other

areas and trails authorized for OHV use to residents and visitors, as an encouragement to use these designated areas.

ENFORCEMENT OF CCRS

Covenants, conditions, and restrictions (CCRs) developed for the master planned community would be implemented through violations and fines. These CCRs were required under the Development Agreement between CSI and Lincoln County for the project. To ensure implementation of the CCRs, the Master Association (the homeowners association) would provide for CCR enforcement in the community, including through providing a sub-station for the Lincoln County sheriff's office. Fees paid by owners within the Development Area to the Master Association would ensure that sufficient funds would exist for enforcement of the CCRs.

MITIGATION MEASURES

Mitigation measures for the desert tortoise, banded Gila monster, and western burrowing owl would consist of development fees and permanent protection of desert tortoise, banded Gila monster, and western burrowing owl habitat on CSI leased and private lands. In combination, these measures would mitigate the effects of community development and construction activities on these species.

MITIGATION FEES

Overall, the avoidance and minimization measures would not offset the potential impacts from land development and maintenance activities on 20,716 acres of desert tortoise habitat, including areas designated as desert tortoise critical habitat. Thus, land developers would pay a per-acre development fee for disturbance on non-federal property throughout the project area that would result in take associated with loss of desert tortoise habitat based on a fee system as defined below.

Mitigation fees for the development of private land would be $800 per acre (USFWS 2005) and are estimated to generate approximately $16.6 million ($800 x 20,716 acres, after preserved WOUS and upland habitat are subtracted from the Development Area) over the permit period (Table 3-9). Fees would be paid as development lands are disturbed. These fees would be used to administer and ensure compliance with the incidental take permit, complete clearance surveys, install fencing, and implement conservation measures and research activities. Proposed research activities are briefly described below.

RESEARCH EFFORTS

It is anticipated that a large component of the mitigation fees (approximately 50 percent) generated by the CSI MSHCP would be used for research efforts. As noted earlier, the specific priorities and implementation schedule for implementing these efforts associated with the CSI MSHCP would be developed and approved as outlined in Chapters 8 and 9 of the CSI MSHCP. Initially, unless modified, research described herein would have the highest priority for implementation, while other research described under Section 3.2.2.4: Adaptive Management Plan would be considered of a lower priority. The completion of research efforts, including obtaining collection permits for the desert tortoise, would be the responsibility of researchers receiving funds generated by the CSI MSHCP. Below are brief overviews of proposed research, which are further described in Chapter 9: Adaptive Management and Monitoring of Volume 2: CSI MSHCP.

HEAD STARTING PROGRAM FOR THE DESERT TORTOISE

A head-starting program has been proposed for implementation for desert tortoise populations in Nevada to increase the probability that tortoise populations would remain until other threats can be effectively addressed (e.g., abating excess mortality as suggested in the recovery plan). This program would also provide animals for release in management-related experiments described under Section 3.2.2.4: Adaptive Management Plan.

Table 3-9 Summary of Anticipated Revenues and Expenditures Associated With Implementation of the CSI MSHCP

	Estimated Budget for Each Time Period								
Item	**0-5**	**6-10**	**11-15**	**16 -20**	**21-25**	**26-30**	**31-35**	**36-40**	**All Years**
Revenue									
Mitigation Fees	$1,005,600	$2,286,400	$3,294,400	$3,880,000	$2,920,000	$2,418,400	$640,800	$126,400	$16,572,800
Acres Disturbed	1,257	2,858	4,118	4,850	3,650	3,023	802	158	20,716
Expenditures									
HCP Management Program Coordinator	$250,000 ($50,000/year)	$500,000 ($100,000/year)	$500,000 ($100,000/year)	$500,000 ($100,000/year)	$500,000 ($100,000/year)	$500,000 ($100,000/year)	$500,000 ($100,000/year)	$500,000 ($100,000/year)	$3,750,000
Avoidance/Minimization Measures Fencing North and East Boundaries (4 miles/time period)	$118,500 ($5.50/ft)	$118,500 ($5.50/ft)	$118,500 ($5.50/ft)	$118,500 ($5.50/ft)	0	0	0	0	$474,000
Avoidance/Minimization Measures Clearance Surveys	$43,995	$100,030	$144,130	$169,750	$127,750	$105,805	$28,035	$5,530	$725,060
Mitigation Measures Research Recovery Enhancement	$591,848	$1,565,012	$2,527,652	$2,992,078	$2,193,778	$1,714,750	$17,141	$765	$11,603,024

TRANSLOCATION PROGRAM FOR THE DESERT TORTOISE

When properly implemented, translocation may provide a valuable tool that can be used to minimize direct impacts to desert tortoises, augment natural populations, or to repatriate otherwise suitable areas that have experienced local extirpations and assist in recovery (Field et al. 2007, Nussear 2004). Translocation activities also provide an opportunity for collecting monitoring data to determine if desert tortoises respond in a manner predicted by resource managers, and an opportunity to conduct research that yields new data that can be used to manage the species in a proactive manner.

FUND RESEARCH OF THE ECOLOGICAL IMPLICATIONS OF FIRE AND HABITAT RESTORATION AFTER FIRE

Recent wildfires have caused widespread loss of desert tortoise habitat in Nevada; particularly in Lincoln County. Funding to study: 1) the effects of fire on seed banks and subsequent forage plant communities; 2) the effects of depleted shade resources on tortoises during activity periods, and upon the temperatures in subterranean burrows; and 3) the effects of habitat fragmentation on local populations, extirpation of local populations, and the loss of landscape linkages to metapopulation persistence would be a useful tool for all landowners in Lincoln County.

INVASIVE SPECIES MANAGEMENT

Invasive plant control and research actions would be funded through this CSI MSHCP and implemented through the Weed Management Plan (included in Appendix J).

HABITAT MODELING AND SURVEYS FOR BANDED GILA MONSTER AND WESTERN BURROWING OWL

Research efforts for the banded Gila monster would include research on predictive habitat modeling and genetics for the species.

Burrowing owl surveys would be based on methods presented in Burrowing Owl Surveys and Management Recommendations (USGS 2007). As part of this study, owl survey data from CSI private lands in Lincoln County would be incorporated into a habitat model. Through the AMP, baseline information would be used to measure the adequacy of avoidance, minimization, and conservation measures proposed for the burrowing owl in the CSI MSHCP.

Approximately 68.8 percent of the funds generated from land development activities would be used towards implementing desert tortoise research activities and restoring the CSICL, thereby improving habitat for desert tortoise, banded Gila monster, and western burrowing owl. The Weed Management Plan would be funded by these mitigation fees to improve habitat in the CSICL. Funds would be used for desert tortoise fencing. Funds would be used for research and monitoring activities primarily for the desert tortoise. While the desert tortoise is the primary focus of the research plan, research on the Gila monster and western burrowing owl may also be included in the future; however, this would be subject to approval by the Executive Committee and the Science Advisory Team. Research activities would include implementation of research priorities identified in the CSI MSHCP. Prioritization and implementation of these research activities would occur through the Adaptive Management Plan (AMP) and monitoring (Chapter 9: Adaptive Management and Monitoring in Volume 2: CSI MSHCP). The degree, timing, and scope of implementation of the research efforts would be at the direction of the process established for implementing the CSI MSHCP.

ADDITIONAL FEES

CSI has agreed to contribute $750,000 to fund research and activities that would further conservation efforts for the desert tortoise. These funds would be set aside within 30 days of issuance of the incidental take permit associated with the CSI MSHCP. They would be put in the Section 10 Trust Fund, an interest-bearing account, to be used at the USFWS's direction.

COYOTE SPRINGS INVESTMENT CONSERVATION LANDS

Protection of desert tortoise suitable and critical habitat and banded Gila monster and western burrowing owl potential habitat in the CSICL and adjacent ACECs is another main component of the mitigation measures for these species. Subsequent to completion of the land adjustments described herein, BLM would manage the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land

Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species. Approximately 7,548 acres of land in Lincoln County would be included in the CSICL and would be adjacent to approximately 6,219 acres of conserved land within Clark County; all 13,767 acres of land are to be included in this conservation measure. Any activities that occur within this area would be consistent with passive recreational use or scientific research uses.

The configuration of the CSICL, located to the east of the Development Area, would maximize habitat connectivity of the area to adjacent desert tortoise critical habitat and BLM ACEC, and would preserve wildlife migration corridors. This reduces the amount of habitat fragmentation that could have occurred from development and preserves an area that would not be developed.

3.2.2.4 Adaptive Management Plan

The primary reason for using an adaptive management approach is to allow for changes in the mitigation strategies that may be necessary to reach long-term goals of the habitat conservation plan and to ensure the likelihood of survival and recovery of the species in the wild (USFWS and NMFS 1996). Often, gaps in the scientific literature exist with regards to biological requirements of listed species, which can result in a level of uncertainty in the effectiveness of proposed conservation measures. Monitoring conservation measures can confirm whether they are effective in protecting species from the effects of the Covered Activities in a habitat conservation plan. If monitoring indicates that conservation measures are inadequate for protecting the Covered Species, conservation measures can be adapted to provide more effective protection and/or new conservation measures can be implemented. For this reason, an AMP has been developed. The CSI MSHCP AMP follows a framework recently developed by the USGS with USFWS for HCPs and similar land use planning efforts that address imperiled species and their habitats (USGS 2004). Additional details on the AMP are included in Chapter 9: Adaptive Management and Monitoring in the CSI MSHCP.

The AMP and Biennial Work Plan (further described in Section 3.2.2.5.5: Coordination) would be an integral part of the framework that would allow CSI, BLM, and USFWS to work together over the 40-year permit term. The CSI MSHCP is a prescription-based HCP in which the biological goals and objectives have guided the development of specific conservation measures. The biological goals and objectives prescribed in conservation measures for each of the Covered Species provide the basis for establishing enforceable prescriptions such that CSI is only required to implement the measures to comply with its permit. For instance, the CSI MSHCP is structured toward implementing a specific replacement cost for disturbance of suitable habitat, which is reflected in the mitigation fees described in Section 3.2.2.3.3. Aside from agreed-upon adjustments, the mitigation fee would not change during the term of the permit, except under an HCP's normal triggers and/or specified herein. Furthermore, if CSI complies with the requirement to pay the set mitigation fee as a result of disturbance of suitable habitat, CSI's obligation is satisfied and therefore there would be no basis for requiring that CSI pay an additional amount.

As part of the AMP, CSI is committed to conservation actions as elements in their overall plan to avoid the "take" of the covered species, to minimize "take" where it cannot be avoided, and to mitigate for expected impacts. The AMP would monitor the effectiveness of such implemented conservation actions and management prescriptions in meeting these biological goals, recommend alternative actions to pursue in the event that the goals are not being met, and would incorporate any other information, including third-party scientific research, that has bearing on the how best to meet the biological goals.

Overall steps that would be followed in the AMP are as follows:

- CSI and/or developers would pay mitigation fees,
- Funds are then placed in a Section 10 Trust Fund,
- A Biennial Work Plan is developed which identifies research and other actions to be carried out,
- A 5-Year Management Action Plan (MAP) is developed, which further identifies research and other actions to be carried out over a longer term,
- Research, management, and monitoring are carried out,

- For the development of the next Biennial Work Plan, results of research and monitoring are evaluated in an Annual Compliance Report and a Biennial Monitoring Report and such results would determine whether future actions and research would be modified, and
- Every ten years, a Comprehensive Review would address what is included in the Annual Compliance and Biennial Monitoring Reports, as well as assess whether additional conservation measures would be needed.
- Decision points related to the Biennial Work Plans, 5-Year Management Action Plans, and Comprehensive Reviews are outlined in Table 3-10.

Table 3-10 Decision Points of the Adaptive Management Plan

Review Type	Timeframe	Compliance Criteria	Assessment
Biennial Work Plan	Every two years	Level of take (e.g. ground disturbance) Implementation of conservation measures Generation of HCP funds Expenditure of HCP funds	Assess implementation of conservation measures in relation to schedule and level of effort outlined in the CSI MSHCP. Assess level of take in relation to amount requested in the CSI MSHCP.
Management Action Plan	Every five years	Revised or refined management goals, objectives and strategies, as needed Generation of HCP funds Expenditure of HCP funds	Prioritization of management and monitoring activities based on funding available Selection of monitoring locations Selection of research studies to be funded
Comprehensive Review	Every ten years	Level of take (e.g. ground disturbance) Implementation of conservation measures Generation of HCP funds Expenditure of HCP funds	Assess implementation of conservation measures in relation to schedule and level of effort outlined in the CSI MSHCP. Assess level of take in relation to amount requested in the CSI MSHCP. Assess the expected out come from implementing the Covered Activities and conservation measures. If the expected outcome, associated with the potential effects and conservation measures, has a significantly greater impact on species than the level described and assessed in the CSI MSHCP, the USFWS would notify CSI of the need to implement additional conservation measures.

For each conservation action, implementation of the CSI MSHCP would establish one or more units of measurement to evaluate success of the action, termed "performance metrics." Some of these metrics are derived from compliance monitoring, while others are derived from effectiveness monitoring.

- **Compliance Monitoring.** Asks the question, are the avoidance and/or minimization measures being implemented properly? For these, the performance metric would be a numeric tally or straightforward "yes" or "no" observations; i.e., "yes," it is being implemented properly, or "no," it is not.
- **Effectiveness Monitoring.** Questions whether the mitigation action is effective at achieving the overall objective of the HCP.

3.2.2.4.1 Compliance Monitoring

Compliance monitoring would ensure that the following occurred:

- Assisting in coordinating the operations and AMP elements of the overall HCP;
- Soliciting and summarizing the receipt, expenditure, and transfer of funds;
- Accounting for the location and amount of impacts on Covered Species, focal species, and other targeted resources;

- Accounting for use of NDOW protocols for banded Gila monster (NDOW 2007) and USFWS protocols for western burrowing owl (USFWS 2007);
- Accounting for lands added to the CSICL; and
- Summarizing actions related to assembly, management, and monitoring of the CSICL.

CSI would prepare an annual report that outlines and summarizes all permit compliance efforts. Components of the compliance report to be prepared by CSI include, but are not limited to:

- The level of which BMPs and avoidance and minimization measures were implemented to reduce or avoid interaction with listed species as outlined in the CSI MSHCP as a result of the Covered Activities;
- The level of which workers/personnel followed the BMPs and avoidance and minimization measures designed to reduce or avoid interaction with listed species as outlined in the CSI MSHCP as a result of the Covered Activities;
- The types of materials and equipment used and/or frequency of the activity conducted;
- The acreage of habitat disturbance involved with each of the Covered Activities in the previous year;
- A summary of mitigation fees collected; and
- A summary of mitigation research efforts selected and implemented.

3.2.2.4.2 Effectiveness Monitoring

Effectiveness monitoring would be used to determine whether the mitigation actions to be implemented are achieving the biological goals and objectives for each of the species to be covered under the CSI MSHCP. Careful attention would be given to how the sampling protocols for the potential conservation actions can provide feedback to the objectives of the CSI MSHCP that are designed to ensure the long-term survival of the Covered Species within the project area of the CSI MSHCP.

It is reasonable to expect that monitoring techniques and related technology could change substantially through the life of the CSI MSHCP. Therefore, it is essential to build flexibility into the monitoring efforts to respond to such changes. Some monitoring protocols may be replaced, by more efficient and/or accurate techniques, to address the same issues, and entirely new monitoring approaches may be implemented to address unforeseen issues. Proposed changes to the monitoring efforts would be evaluated by the HCP Administrator with assistance from technical advisors, as needed, to ensure that they do not reduce the ability of the program to achieve its goals and objectives and to provide feedback for adaptive management. Periodic reviews of the monitoring efforts, every five years or upon substantially changed circumstance(s), should justify any changes. All changes to the monitoring program would be subject to the concurrence of USFWS, BLM, and CSI.

The key components of effectiveness monitoring in the CSI MSHCP's AMP would include:

- Management and monitoring of resources, including assessment of the extent to which goals and objectives detailed in the conservation measures chapter are met, at three fundamental scales: (1) natural landscape mosaic; (2) specific vegetation community (including subcommunities and "habitats"; and (3) species and species assemblages, with emphasis on desert tortoise and other covered species.
- Use of a stressors-based adaptive management concept, including the use of focal species and habitat conditions monitoring to identify stressors that must be addressed in order to maintain the effectiveness of the long-term management program.
- Preparation of implementation plans, including the biennial work plan and five-year MAP.
- Biennial reports prepared by the HCP Administrator, with assistance by the TAC.
- Public review of the biennial reports prepared by the Administrator.
- A comprehensive report from the HCP Administrator and the TAC every ten years.

3.2.2.4.3 Conservation and Research Opportunities for Desert Tortoises on CSI and Adjacent Lands

Research opportunities that could occur on CSI and adjacent lands in relationship to this AMP include the following:

- Headstarting and translocation;
- Importance of roads on tortoise populations;
- Habitat modeling for tortoises in Coyote Spring Valley;
- Surveys to map densities of tortoises;
- Ecological implications of fire and habitat restoration after fire; and
- Paired experiments to address threats management.

This research that would be conducted through the AMP has been described in part under the conservation measures above and in greater detail in Volume 2: CSI MSHCP.

3.2.2.5 Funding and Coordination

3.2.2.5.1 Funding

CSI would manage the collection of the fees as part of issuance of the appropriate permitting process. A Section 10 Trust Fund would be established by CSI upon issuance of the incidental take permit. The principal income and interest shall be used exclusively to fund the administration, and the minimization and mitigation measures set forth in the CSI MSHCP. This Trust Fund is a separate account from the Section 7 Fund account. All long-term and supplemental revenues received would be deposited into the Section 10 Trust Fund, as allowed by law, which would be an interest bearing account. All incidental take permit administration, implementation, and maintenance expenses would be paid from this fund. Each year, members of the EC would make a determination of what needs to be done with regards to implementation of the CSI MSHCP and would recommend expenditures to cover costs of specific plan implementation needs. As appropriate, bids would then be received by CSI and reviewed by EC for projects identified by the EC for implementation. The Biennial Work Plan developed by the EC and approved by CSI, with concurrence of the USFWS, would establish priorities and determine how these funds are spent on the Covered Species and other MSHCP needs.

Upon approval of the CSI MSHCP and issuance of the incidental take permit, the Section 10 Trust Fund and its income would be used exclusively to administer and implement the terms of the CSI MSHCP. Table 3-10 summarizes the funding sources and uses for funding within the context of the 40-year permit. The primary source of funding would be derived from the continuation of fees collected for each acre of disturbance of non-federal lands in the project area and interest accrued from the Section 10 Trust Fund over the permit term. Funds remaining in the trust fund at the conclusion of the term of the permit would be retained by CSI in an interest-bearing account and expended in cooperation with the USFWS solely and exclusively for conservation measures consistent with recommendations of the AMP.

3.2.2.5.2 Desert Tortoise Mitigation Fees

ACTIVITIES SUBJECT TO DESERT TORTOISE HABITAT MITIGATION FEES

The CSI MSHCP proposes the imposition of a mitigation fee of $800/acre for all development activities on private land in desert tortoise habitat. Development activities (described in Chapter 4: Covered Activities of the CSI MSHCP) on private land that require mitigation fees include the following:

- Community development and construction,
- Recreational facilities and open space,
- Utility infrastructure,

- Water supply infrastructure and management,
- Flood control structure and maintenance including stormwater management, and
- Resource management features.

CSI acknowledges that many of the above activities would additionally require various federal, state, and local permits. In particular, the majority of flood control projects would require clearances under Section 404 and 401 of the CWA. Regardless, CSI would require that, unless exempt, any developer or landowner that conducts new land disturbances, as described above, must pay a mitigation fee as described herein.

DESERT TORTOISE HABITAT MITIGATION FEE PROJECTIONS

The mitigation fee would be imposed on all land disturbance on private lands within the project area which is subject to development permits as defined by Lincoln County and would be paid at the time of issuance of the building or grading permit or prior to land disturbance.

Habitat mitigation fees would be paid for up to approximately 20,716 acres of the 21,454 gross acres of the CSI private lands projected to be developed by the CSI MSHCP. If BLM imposes a fee, additional fees would be collected for the taking of up to 244 acres of habitat from Flood Management activities within the BLM utility corridor. The habitat mitigation fee for the lands to be developed would generate approximately $16.6 million in fees during the term of the CSI MSHCP.

Fees would be pro-rated to the quarter-acre. Any disturbance less than one-quarter acre in size would be subject to a one-quarter acre fee assessment. The mitigation fees would be held in the Section 10 Trust Fund, an interest bearing account.

3.2.2.5.3 Coordination

Upon approval of the CSI MSHCP and issuance of an incidental take permit, CSI would be responsible for the administration and implementation of the CSI MSHCP under the conditions of the incidental take permit. CSI would utilize two committees to facilitate implementation of the CSI MSHCP. The EC would be established as the decision-making authority for implementation of the CSI MSHCP. An HCP Administrator would be engaged to assist the EC in managing the implementation of the CSI MSHCP. A Technical Advisory Committee (TAC) would be established to provide specific recommendations related to on-the ground technical issues associated with implementation of the CSI MSHCP. A CSI representative would chair both of these committees. Funding sources for implementation of the CSI MSHCP is expected to come from mitigation fees and supplemental funding sources as needed.

Upon signing the Implementing Agreement (IA), CSI would conduct the following:

- Appoint an HCP Administrator (role described below),
- Create the Executive Committee (EC) (described below),
- Establish the Section 10 Trust Fund account for collected revenues (refer to Section 3.2.2.5.1),
- Negotiate, coordinate and establish an annual and biennial schedule detailing due dates for reporting and budgeting. The schedule would consider the fiscal budget timing for the county, federal programs, and the federal and state legislative sessions including:
  - Due dates for participant reports to the EC,
  - Due dates for submitting funding requests to the EC,
  - Annual Compliance Report due to CSI and the USFWS from the EC, and
  - EC meetings.

Long-term revenues secured from desert tortoise mitigation fees paid by CSI would provide a permanent reliable source of dollars that would fund implementation of the CSI MSHCP and associated conservation measures. Since these long-term revenue sources are derived directly from growth allowed under the incidental

take permit, adequate revenues would be available to implement conservation measures commensurate with the cumulative level of take for the duration of the 40-year permit.

COMMITTEES

EXECUTIVE COMMITTEE

The EC, chaired by CSI, would oversee implementation of the CSI MSHCP with the assistance of the HCP Administrator and the TAC. The EC may review, comment, and make recommendations to CSI regarding prioritized conservation measures (minimization/mitigation) and budget proposals submitted by CSI and/or other participants. Budgets would be reviewed annually.

HCP ADMINISTRATOR

CSI would administer the CSI MSHCP. To accomplish this task, CSI would engage an HCP Administrator to facilitate implementation of the CSI MSHCP and to chair the proceedings of the EC. The HCP Administrator would have a sufficient scientific or technical background to accomplish these tasks and/or to consult with the TAC or species experts for specific issues as appropriate and at the direction of the EC.

TECHNICAL ADVISORY COMMITTEE

The TAC, chaired by CSI, would as requested make recommendations to the EC and HCP Administrator on implementation of on-the-ground conservation measures associated with the CSI MSHCP. These measures may include, but are not limited to, specific locations for permanent desert tortoise fencing, types of fencing, and/or weed management activities. The TAC may review, comment, and make recommendations to the EC regarding prioritized conservation measures (minimization/mitigation) and biennial work plans.

DESERT TORTOISE RESEARCH AND RECOVERY ADVISORS

As needed and/or directed by the EC, the HCP Administrator may consult with desert tortoise species experts. The USFWS has established a Desert Tortoise Science Advisory Committee (DTSAC) to address research needs associated with implementation of recovery actions for desert tortoise. However, DTSAC is not the only group of experts that may be consulted.

BIENNIAL WORK PLAN

Implementation of the CSI MSHCP would require adequate planning and budgeting by the HCP Administrator and the EC. The EC, with the assistance of the HCP Administrator, would prepare a Biennial Work Plan detailing the specific accomplishments to be achieved in order to meet the conservation measures identified in the CSI MSHCP. The Biennial Work Plan would identify:

- Goals and objectives,
- Various tasks to be accomplished,
- Who would conduct the work, and
- Outline a schedule of events and budgets for the year.

The Biennial Work Plan would be presented to the CSI and USFWS for approval consistent with the standard fiscal year. USFWS' approval is dependent, in part, on the requirement to ensure that all avoidance, minimization and mitigation measures are commensurate with the level of impact to the Covered Species.

ANNUAL COMPLIANCE REPORT

The HCP Administrator, with the assistance of the TAC, would prepare an Annual Compliance Report no more than 60 days following the end of the fiscal year detailing the accomplishments of the previous year and how well the goals and objectives of the previous year's work plan were met. The Annual Compliance Report would present the status of implemented conservation measures and the effectiveness of those measures as well as any problems encountered with the avoidance, minimization, and/or mitigation efforts implemented during that year. The report may make recommendations for changes for the following year, if warranted. If

needed, the EC may request additional information or clarification. The Annual Compliance Report would be used to track land disturbance, take, and funding levels in the Section 10 Trust Fund. Also, the number of acres disturbed within a specific time period and the amount of remaining acres available under the incidental take permit would be included. CSI anticipates planning at least a year in advance for land disturbance activities, and therefore, compliance monitoring would be reported annually.

The Annual Compliance Report would include the following:

- A description of all conservation measures initiated, continued, or completed during the previous year and a description of conservation measures projected to be implemented for the upcoming year;
- A tabulation and description of incidental take associated with habitat loss known to have occurred during the previous year and a projection of habitat disturbance for the upcoming year;
- A brief and concise summary of findings, results, and conclusions of monitoring or research (if reports are timely received from the researchers) conducted;
- A tabulation and description of funds expended during the previous year and a projection of funds to be expended during the upcoming year for the conservation and monitoring actions described in the preceding reports; and
- Other recommendation, such as minor modifications or amendments to the CSI MSHCP documents.

The Annual Compliance Report would be approved by CSI and forwarded to the USFWS. The Annual Report must provide sufficient information to prove compliance with the CSI MSHCP incidental take permit. If additional detail is needed, the USFWS must submit a request in writing to CSI within 30 days of receipt of the Annual Compliance Report. CSI shall have a reasonable amount of time to respond to the USFWS request.

In addition to the Annual Compliance Report, final reports associated with research projects funded with CSI MSHCP funds would be made available to the HCP Administrator and each member of the EC. The responsibility for production and submittal of these reports would be the researcher conducting the studies.

3.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

This alternative would result in the issuance of an incidental take permit by USFWS and a Section 404 permit by the Corps that would allow development of the entire CSI private and lease lands in Lincoln County, Nevada. Under Alternative 1, the BLM would reconfigure the land holdings to the north and east of the project area (Figure 3-5), but would not manage the CSI lease lands in Lincoln County as conservation lands. The project area for Alternative 1 would total 32,333 acres. Approximately 21,454 acres of private property would be available for development, while 7,548 acres of lease land (99-year lease with an automatic 99-year extension) would be available for activities specified in the Land Lease Agreement. Detention basin facilities would be sited on up to 244 acres within the BLM utility corridor west of U.S. Highway 93 in Lincoln County. Because this land is federal, these detention basins would not be covered by an incidental take permit from the USFWS, but instead would be addressed through Section 7 consultation.

All land owned and leased by CSI would be available for development activities immediately upon issuance of an incidental take permit and other required regulatory permits, rather than be phased in under an adaptive management plan. It is expected to take some time to build the community and associated infrastructure, but there would be no phasing of the development. An incidental take permit would be issued based on a regional HCP, not the CSI MSHCP.

New town development and construction activities would be of the same types as described under the Preferred Alternative, but the density of all development activities would be increased. The new town would eventually include approximately 131,879 residential dwelling units, a development rate of 6.5 residential units per gross acre. Approximately 85,000 afa of water would be needed to support the development at build out.

As authorized in the Land Lease Agreement, the lease lands could be used for constructing and operating roads, utility lines, storage facilities and wells, and for any other lawful purpose that the Secretary of the Interior may authorize, subject to the requirements of the Nevada-Florida Land Exchange Authorization Act of

1988 and to reasonable requirements that the Secretary of the Interior may establish for the protection of the desert tortoise and any other species of fish, wildlife, or plants.

The 6,219 acres of CSI lease land in Clark County would not be counted as mitigation for activities on lands in Lincoln County for the desert tortoise under Alternative 1. The 6,219 acres would still be added to the CSICL, as described in ENTRIX et al. 2005.

Covered, Evaluation, and Watch List Species would be the same species as those addressed under the Preferred Alternative (see Table 1-1 for a list of the Covered and Evaluation Species).

3.2.3.1 CSI Development Activities

Activities that would be permitted under the Section 404 and incidental take permits would be similar to those described for the Preferred Alternative, although all activities could occur immediately upon issuance of required permits, rather than in a phased approach. As described for the Preferred Alternative, the development would include residential housing, mixed-use urban villages, public buildings, and other public facilities. Commercial and light industrial development would occur to support the local community. Hotels, resorts, and casinos would be planned, and roads and bridges would be constructed. Recreational facilities (i.e., golf courses, amusement parks, parks, playfields, trails and open space areas) would serve residents and visitors. Utilities and other infrastructure would be developed to serve the town and would include power facilities, sanitary sewer and wastewater treatment facilities, stormwater facilities, solid waste disposal transfer stations, and telecommunications facilities. Water supply treatment and production facilities, monitoring wells, storage facilities, and transmission and distribution facilities would also be Covered Activities under Alternative 1. Treated effluent storage, distribution and discharge facilities would be constructed. Flood control structures would be developed and operated. Also, the detention basins within the BLM utility corridor described in the Preferred Alternative would also be addressed through Section 7 consultation with the USFWS (instead of through an incidental take permit) under Alternative 1. Table 3-11 shows the approximate acreage of development, and Figure 3-5 shows the proposed configuration of Alternative 1, including type of development and conservation easements.

Table 3-11 Type of Development and Estimated Percentage Breakdown for Alternative 1

Development Type	Percentage of Development	Acreage of Development	Mid-Range Percentage	Acreage
Residential – single family	65 to 80 percent[1]	13,945 to 17,163	72.5	15,554
Residential – multi-family	5 to 10 percent[1]	1,072 to 2,145	7.5	1,609
Commercial and light industrial	5 to 10 percent[1]	1,072 to 2,145	7.5	1,609
Hotels and resorts	2 to 6 percent[1]	429 to 1,287	4	858
Open space	5 to 12 percent[1]	1,072 to 2,700	8.5	1,824
Activities according to the Land Lease Agreement	25 percent of Total Acreage[2]	7,548	--	7,548
Total			**100 percent**	**29,002**

[1]Percentage of total acreage of private lands (21,454 acres)
[2]Percentage of total development acreage (29,002 acres)

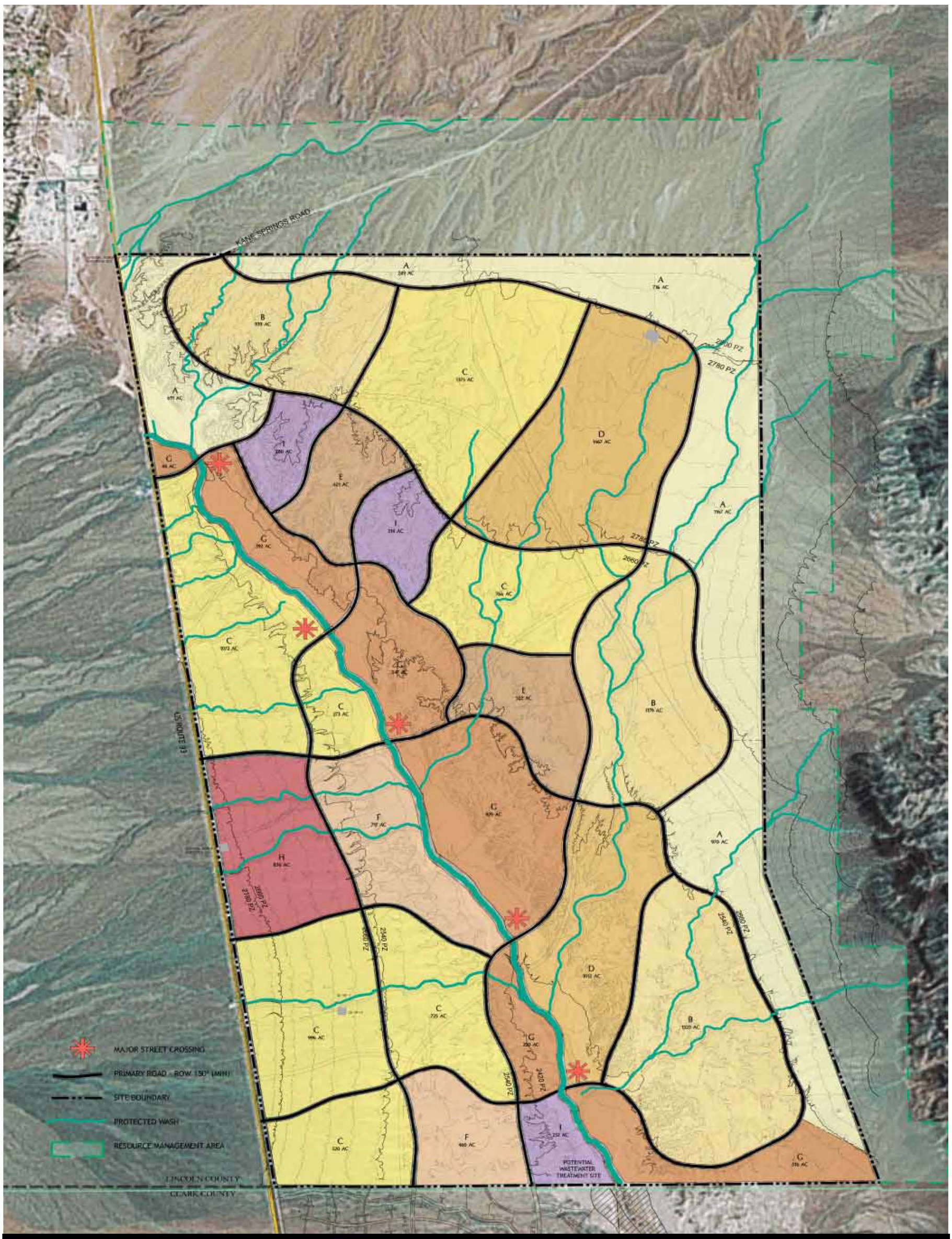


Figure 3-5
Configuration of Alternative 1, Including Type of Development and Conservation Easments

E N T E I

3.2.3.1.1 Modification of WOUS

Unavoidable impacts to WOUS as a result of construction activities are summarized in Table 3-12.

Table 3-12 Proposed Modification to WOUS Under Alternative 1

	Development Area	BLM Utility Corridor	Lincoln County Lease Lands	Total
Potentially disturbed WOUS	29.8	5.1	Up to 6.3	34.9 plus up to 6.3 on Lincoln County lease lands
Avoided WOUS	22.6	0		22.6 plus any avoided on Lincoln County lease lands
Total Existing WOUS	**52.4**	**5.1**	**6.3**	**63.8**
Restored WOUS	69.8*	0	0	69.8
*Includes restoration for WOUS impacted within BLM utility corridor. Mitigation ratio calculated at a 2:1 ratio (restored to impacted).				

3.2.3.2 Conservation Measures

Many of the conservation measures undertaken in this alternative would be similar to the conservation measures identified for the Preferred Alternative. However, because this alternative would not include a phased approach, only certain measures would apply. Conservation measures for WOUS and Covered Species are identified below.

3.2.3.2.1 Waters of the United States Conservation Commitments

Table 3-13 summarizes the conservation measures for WOUS. The avoided WOUS and upland buffer habitat would reduce the total acreage in which activities could occur on to 21,087 acres within the Development Area (21,454 acres less 22.6 acres of preserved WOUS and 344.8 acres of associated upland buffer habitat). Activities could also occur on up to 244 acres within the BLM utility corridor and up to 7,548 acres of the lease lands in Lincoln County.

Table 3-13 Proposed Conservation Measures for WOUS Under Alternative 1

	Development Area	BLM Utility Corridor	Lincoln County Lease Lands	Total
Avoided WOUS also protected in a conservation easement	22.6	0	0	22.6
Restored WOUS	69.8	0	0	69.8
Total WOUS protected in an easement	**92.4**	**0**	**0**	**92.4**
Upland Buffer Habitat for preserved WOUS (100 ft on each side)	174.3	0	0	174.3
Upland buffer habitat for preserved WOUS (30 ft on each side)	170.5	0	0	170.5
Total upland buffer habitat for preserved WOUS	**344.8**	**0**	**0**	**344.8**
Total acreage in either a Perpetual Conservation Easement Grant and Drainage and Maintenance Easement (protected, avoided WOUS, restored WOUS, upland buffer habitat)	**437.2**	**0**	**0**	**437.2**

AVOIDANCE/MINIMIZATION MEASURES

The CSI Development would avoid impacts to 22.6 acres of WOUS within the Development Area. No wetlands or other type of EPA special aquatic habitat occurs within the Development Area (see Appendix H: *Investigation of the Presence of Wetlands and Other Waters of the United States Within the Coyote Springs Area, Lincoln County, Nevada*). The project has been designed to avoid and minimize direct impacts where practicable.

- Avoidance and minimization measures to protect habitat in WOUS would be the same as described for the Preferred Alternative.

MITIGATION MEASURES

Mitigation measures to protect WOUS would include the following:

- 22.6 acres of preserved WOUS would be placed in a Perpetual Conservation Easement Grant.
- 69.8 acres of restored WOUS placed in a Drainage and Maintenance Easement.
- 344.8 acres of upland buffer habitat on the CSI property in Lincoln County, which would not be subject to permanent dwelling units, would be placed in a Perpetual Conservation Easement Grant.

PERPETUAL CONSERVATION EASEMENT GRANT

To mitigate for impacts to WOUS, a conservation easement would be implemented. Implementation of a Mitigation Plan for impacts to WOUS under this alternative would include some or all of the following conservation measures.

- A Perpetual Conservation Easement Grant would be placed on preserved desert dry washes and upland buffer habitat in the Development Area (see Figure 3-5).
  - Avoiding construction activities on 22.6 acres of desert dry washes (WOUS), and
  - Preserving 344.8 acres of upland buffer habitat consisting of: 1) a 100-foot-wide buffer on each side of the portions of the Pahranagat Wash incised ephemeral channel; and 2) a 30-foot-wide buffer on each side of preserved desert dry washes.
- A Drainage and Maintenance Easement would be placed on restored desert dry washes in the Development Area.
  - Restoring 69.8 acres of WOUS
- Once mitigation success criteria have been met, the management responsibility for this easement would be assumed by the grantee of the conservation easement. The grantee would be a BLM-, Corps- and USFWS-approved entity or organization with demonstrated experience in managing lands as a conservation easement grantee. The BLM would have to authorize the conservation easement, as the area around the Pahranagat Wash incised ephemeral channel would remain as lands CSI would lease from the BLM under this alternative. The Corps and USFWS would be established as third-party beneficiaries to ensure that the area remains as an open space preserve in perpetuity.

COMPENSATION

Implementation of a Mitigation Plan under Alternative 1 would result in the restoration of 55.6 acres of WOUS consisting of desert dry washes as compensation for impacted WOUS. This would be accomplished by:

- Restoring desert dry washes so as to provide a net increase in fully functional, self-sustaining desert dry washes having habitat functions and associated values similar to those present onsite prior to the onset of project construction;
- Providing for contingency measures in case desert dry wash restoration efforts fail to meet success criteria; and
- Providing financial guarantees for an agency-required five-year monitoring period, five-year short-term maintenance program, and erosion control measures during implementation.

ACQUISITION AND PRESERVATION

A total of 92.4 acres of desert dry washes would be preserved under Alternative 1. The following is a summary of the lands preserved:

- Preservation of 22.6 acres of desert dry washes.
- Preservation of 69.8 acres of restored desert dry washes.

OTHER MEASURES

Alternative 1 would provide the following additional protections:

- A Long-Term Protection Plan, which would include "in perpetuity" management to include periodic maintenance inspections (conducted quarterly or annually) and maintenance, if necessary, and
- Funding of the Long-Term Protection Plan with an endowment, which would be provided to the grantee of the Perpetual Conservation Easement Grant and Drainage and Maintenance Easement.

3.2.3.2.2 Moapa Dace and Virgin River Chub Conservation Commitments

AVOIDANCE/MINIMIZATION MEASURES

Avoidance and minimization measures for the Moapa dace and Virgin River chub would be the same as described for WOUS above.

3.2.3.2.3 Desert Tortoise, Banded Gila Monster, and Western Burrowing Owl Conservation Commitments

Conservation measures to benefit desert tortoise, banded Gila monster, and western burrowing owl would include the following.

AVOIDANCE/MINIMIZATION MEASURES

Avoidance and minimization measures would be the same as described for the Preferred Alternative.

MITIGATION MEASURES

- Conservation easements along the Pahranagat Wash incised ephemeral channel and other desert dry washes identified above would benefit desert tortoise, banded Gila monster, and western burrowing owl.
- USFWS and CSI would also develop off-site mitigation under the full build out alternative, to mitigate the increased habitat acreage disturbed by development activities. This mitigation would likely have to occur on federal land because approximately 98 percent of land in Lincoln County is owned by the federal government.
- Mitigation fees for the development of private land would be $550 per acre and are estimated to generate up to approximately $15.8 million over the permit period.

3.2.3.3 Adaptive Management Framework

An adaptive management framework similar to that described for the Preferred Alternative would be implemented to address project permitting and appropriate conservation measures. Because the development of the town would not be phased in over time as under the Preferred Alternative, implementation of an AMP would have a limited scope for Alternative 1. Effectiveness of conservation measures would be evaluated as part of an overall Adaptive Management Plan, and a phased-approach for implementation and monitoring of conservation measures would not be used under this alternative. Adaptive management activities for habitat within the project area for terrestrial species would be limited, as they would only occur in response to monitoring effects of activities in relationship to surrounding lands, not to lands within the Development Area.

3.2.3.4 Funding and Coordination

3.2.3.4.1 Funding

Mitigation fees for the development of private and lease land containing desert tortoise habitat under Alternative 1 would be $550 per acre. Development and/or disturbance of up to 28,635 acres of CSI leased and private lands is estimated to generate up to $15.8 million. Mitigation fees would be paid as individual land parcels would be developed, consistent with other regional HCPs in Nevada. CSI cannot impose fees on activities authorized by BLM in the BLM utility corridor; however, BLM could impose fees and require payment to a regional HCP.

3.2.3.5 Coordination

Coordination and implementation of Alternative 1 would be conducted through a regional HCP.

3.3 MITIGATION MEASURES COMMON TO BOTH ACTION ALTERNATIVES

General mitigation measures for the avoidance, minimization, and mitigation of impacts to the environment would apply to both the Preferred Alternative and Alternative 1. Measures are presented below by potentially affected resource categories.

3.3.1 General

- Buffers or areas not to be disturbed by construction activities would be demarcated in a clear fashion.
- All employees would be instructed that their activities must be confined to designated locations.
- Use of best management practices would be inspected daily via the contractor.
- Equipment intended for maintenance and repair activities would be tracked, or wheeled loaders/articulated trucks that have tight turning capability would be used to minimize the need to construct significant turning areas.
- Equipment left on-site during non-working hours would be parked at site-specific staging areas.

3.3.2 Vegetation and Soil

A Weed Management Plan would be developed to monitor and control invasive plants in disturbed areas of the Development Area. This plan would also address using native plants for restoring disturbed areas.

- Native plants and/or seed would be salvaged for later use in restoration activities, especially cacti species protected by Nevada State Law (NRS 527.060-120).
- Vegetation management would be conducted to protect existing vegetation and would include the following components:
  - Steam cleaning of construction equipment prior to entering the project area to prevent introduction of weed species;
  - Minimizing the amount of disturbance to the extent possible during maintenance and repair activities; and
  - Implementing soil stabilization measures, including a mixture of hydromulch, straw, and native seed mix.
- To minimize disturbance to the surrounding soil and vegetation, construction limits would be marked prior to beginning any work under the proposed contract. Construction limits would remain marked until completion of the contract to ensure no disturbance to native vegetation beyond the narrowly defined area would occur.
- Areas with native plants, would be restored or landscaped, possibly using pre-construction salvaged plants in buffer areas, common areas of residential developments, or park and recreational areas.

3.3.3 Wildlife

- Workers would maintain a defined work area perimeter and would keep all construction-related effects within the affected area.
- Construction and stabilization activities would not be allowed at night. This would allow birds to roost in areas near the project without disturbance.
- All known nests and nesting colonies of migratory birds would be avoided. If surveys occurred during the breeding season, during the survey processes for western burrowing owl, banded Gila monster, and/or desert tortoise, surveys for migratory birds would occur and these areas would be avoided in the future.
- Fencing in the Covered Area should be designed as not to include barb wire or wire that would tangle and trap sheep.
- During the cooler months of the year when bighorn sheep are not so tied to water, an increase in bighorn sheep movement occurs. If residents are informed to be careful and watch for sheep movement across main road ways, this may help. (i.e., public awareness).

3.3.4 Hydrology and Water Quality

- A SWPPP in accordance with Section 402 of the Federal Clean Water Act and any state/local requirements would be implemented during construction to minimize impacts to water quality.
- Contractors would be required to use standard erosion control best management practices, including silt fencing, sediment traps, vegetated buffers, sand filters, grassed filter strips, bio-retention structures, soil roughening on graded sites, and earthen perimeter dikes, near ephemeral washes and disturbed sites to control sediment generation and transport.
- Construction site waste management would be required, including: 1) covered trash containers; 2) frequent scheduled collections; 3) oil and fuel products in covered area with dikes in place to contain spills during refueling; 4) immediate clean-up of spills; and 5) vehicle washing and maintenance areas in appropriate areas where untreated discharges can be captured.
- Construction would be sequenced as possible to avoid large expanses of graded, vacant land.
- Worker Environmental Awareness Training for all managers and employees (whether they are employed by CSI or a third party) would be required before a manager or employee is allowed to work on-site. During the training, the managers and employees would be informed that they may be removed from the site and/or be prohibited from returning to the site if they fail to comply with all applicable environmental laws, regulations, permits, plans and programs governing activity in the project.
- CSI would hire staff or contract with a third party to monitor construction activities to protect the Pahranagat Wash incised ephemeral channel.
- A Chemical Application Management Plan (CHAMP) would be developed and employed at each golf course to minimize the impacts from pesticides, fertilizers and other turf management practices (included in Appendix J).

3.3.5 Transportation

Effects to U.S. Highway 93 from increased traffic associated with development of CSI lands in Lincoln County would be mitigated to maintain, at a minimum, a LOS rating of C.

3.3.6 Cultural Resources

Section 106 of the National Historic Preservation Act requires federal agencies to avoid, minimize, or mitigate any adverse effects on cultural resources as a result of a federal undertaking. For the proposed project, the decision-making process for determining actions to offset adverse effects to resources would be outlined under the existing MOU, or in a new MOU or Programmatic Agreement (PA) among the Corps, CSI, and the Nevada

SHPO. USFWS and BLM have delegated certain responsibilities to the Corps to be the lead agency for this Section 106 consultation (Appendix M). If a PA is developed in addition to the existing MOU, CSI may become an invited signatory to the agreement, due to their significant role in carrying out components of the PA. This agreement may include stipulations that outline the continuation of phased efforts to identify and evaluate historic resources on properties within the Area of Potential Effect (APE), consultation process with/between all federal agencies, Nevada SHPO, and any consulting tribes, as well as the implementation of a Cultural Resources Treatment and Mitigation Plan that governs the treatment of cultural resources that would be affected by the proposed project.

3.3.7 Air Quality

3.3.7.1 Fugitive Dust Control Measures

To minimize entrainment of emissions in ambient air at the construction site, the applicant would develop a Dust Mitigation Plan. The Dust Mitigation Plan would describe how to minimize fugitive dust generated by construction activities and would include the following:

- A description of each of the active operation(s), which may result in the generation of fugitive dust.
- An identification of all sources of fugitive dust (e.g., earth moving, storage piles, vehicular traffic).
- A description of the control measures to be applied to each of the dust emission sources identified above with sufficient detail to demonstrate that applicable best available control measure(s) for linear projects would be utilized and/or installed during all periods of active operations.

One or a combination of the following methods would be used to maintain dust control on all disturbed soils and construction sites, including all access routes and staging areas:

- The soil would be maintained in a sufficiently damp condition to prevent loose grains of soil from becoming dislodged, or
- The soil would be crusted over by application of water, or
- The soil would be completely covered with clean gravel or treated with a dust suppressant.

Construction activities at the site would conform to the following fugitive dust control measures (or BMPs):

- Stabilize backfill material with water;
- Apply water or chemical stabilizing agents in sufficient quantities to prevent dust plumes;
- Limit vehicle traffic on disturbed soil and unpaved roads and areas;
- Limit vehicle speeds to 15 mph at staging areas;
- All trucks would be required to cover their loads;
- Graded and/or excavated inactive areas of the construction site would be monitored daily for dust stabilization;
- When winds occur that cause fugitive dust emissions, despite adhering to all BMPs, all construction activities are required to cease immediately, except water trucks/pulls, which should continue to operate. Water trucks/pulls should continue to operate under these circumstances unless wind conditions are such that continued operation of watering equipment cannot reduce fugitive dust emissions or visibility is limited to an extent that it is hazardous to continue operating equipment;
- Pre-water or otherwise stabilize soils prior to trenching;
- Wash mud and soil from equipment;

- Adjacent streets and roads would be cleaned at least once per day, preferably at the end of the day, if visible soil material (or track-out) is carried over to adjacent streets or roads; and
- Revegetate disturbed area as necessary.

3.3.7.2 Construction Equipment Controls

The following control measures would be implemented during construction to minimize emissions of ozone precursors.

- Minimize equipment idling time.
- Maintain equipment engines in good condition and in proper tune per manufacturers' specifications.
- Minimize of the number of pieces of equipment operating simultaneously.
- Use diesel-fired construction equipment that meet EPA Tier II diesel engine standards when feasible (emission estimates are based on Tier I emission factors).
- List the above mitigation measures as criteria in the construction contracting bidding process.
- In the event special technical (e.g., non-economic) circumstances, including safety, prevent the use of at least one of the required control measures for any of the sources identified, a justification statement would be provided to explain the reason(s) why the required control measures cannot be implemented.

3.3.7.3 Vacant Lot and Open Areas Controls

To minimize entrainment of emissions in ambient air from disturbed soils at vacant lots or open areas, the owner/operator could either:

- prevent motor vehicle trespass from occurring; or
- stabilize the trespassed surface with washed gravel or a chemical/organic stabilizer.

If gravel or stabilizer is applied and trespass continues to occur, the gravel/stabilizer may need to be maintained over time so that the surface is stabilized.

Some examples of how to prevent trespass include:

- putting up 3-foot-tall fencing (metallic, wood, plastic, etc.);
- using posts and cable (posts should be greater than or equal to two inches in diameter and cable should be greater than or equal to 1½ inches thick and hang no lower than one foot);
- planting shrubs or trees;
- using cement blocks/barriers or boulders 1½ feet in diameter, spaced no greater than five feet apart;
- constructing a rock or cement wall 1½ feet tall;
- roping off a part(s) of the lot, or
- using "No trespassing" signs if they are observed by trespassers.

Barriers should be placed wherever corners are being cut or along access points to trespassed parts of the lot. The preventative measure selected should be tailored to meet the specific trespassing circumstances.

Mitigation measures should be applied following the initial determination of surface soil disturbance whenever there is one-half acre or more of disturbed, unstabilized surface area on a vacant lot or urban or suburban open area that remains vacant for more than 15 days.

Once the surface is stabilized, it is important that further disturbances be prevented, or alternatively, that the owner/operator take steps to stabilize the surface within 60 days following any future disturbances.

Some options on how to stabilize the surface include:

- watering to form a crust;
- planting native vegetation;
- applying chemical/organic stabilizer;
- applying gravel; or
- restoring the lot to its natural (undisturbed) state.

3.3.7.4 Other Air Quality Mitigation Measures

- The use of a central parking facility to transport workers to and from construction sites. Pooling the transportation of workers to remote sites from central parking localities would lower dust and carbon monoxide levels because fewer vehicle trips would be involved.
- Properly maintain construction vehicle engines requiring air pollution control equipment. Properly tuned equipment would emit fewer harmful pollutants. This measure is highly effective in minimizing local air degradation.
- Place speed restrictions for vehicles on unpaved roads. Dust levels generated by moving vehicles on unpaved roads are substantially reduced at low speeds. Imposing appropriate speed limits on these roads could effectively reduce fugitive dust.

3.3.8 Hazardous Waste

A Hazardous Waste Management Plan would be developed to address hazardous waste storage, disposal, and management. Any fuel, transmission or break fluid leaks or hazardous waste leak, spills or releases would be stopped/repaired immediately and cleaned at the time of occurrence, in accordance with the approved contingency plan. All heavy equipment and vehicles would carry materials to absorb leaks or spills. Contaminated soil would be removed and disposed of at an appropriate facility. Petroleum products such as gasoline, diesel fuel, and lubricants would be secured in approved containers. Hazardous materials would be properly stored in separate containers to prevent mixing, drainage, or accidents.

3.4 ALTERNATIVES CONSIDERED BUT DISMISSED

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the purpose and need for the project provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of the project, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below and in Appendix L. Alternate sites considered by the Applicant as part of the 404(b)(1) alternatives analysis required for the Corps 404 permit are described in Appendix L.

3.4.1 Multiple-Species Permit with a Longer or Shorter Permit Term

This alternative would either shorten or lengthen the term of the permit, at which time it could be reauthorized, modified, or terminated. A shorter permit was not considered, because it would not cover the estimated time needed to complete development of the town on CSI lands in Lincoln County and, therefore, secure funding for the project. A longer permit was not considered, because it would result in a greater amount of incidental take of federally listed species.

3.4.2 Other On-Site Alternatives

As noted earlier, the TSC was formed in 2001, with members from USFWS, BLM, Clark County Comprehensive Planning, Lincoln County, Southern Nevada Water Authority, USGS, State of Nevada Division of Wildlife, Sierra Club, Audubon Society and CSI. In addition, a Biological Advisory Committee was formed to provide technical biology assistance to the TSC. During initial planning from 2001 to 2003 of the CSI development, USFWS and CSI worked with TCS and other entities and individuals to address general concerns, especially for biological resources. As a result, CSI has explored adjustments to private and lease boundaries with the goal of reducing habitat fragmentation and maintaining habitat connectivity between lease land and adjacent desert tortoise Mormon Mesa CHU (and BLM ACEC), while providing an economically viable development on the CSI private lands. A wide range of alternatives have been considered, evaluated, and dismissed during the period since the initial planning efforts commenced in March 2001. Specifics on these early scenarios that were considered but dismissed are included below and figures associated with these scenarios are included in Appendix L. These alternatives were dismissed during the process for a variety of reasons, including: yielding more adverse impact than the proposed action (i.e., proposed development of one area rather than two or more separate areas); concerns related to existing wildlife corridors; habitat fragmentation; reserve edge effects and development edge length; habitat connectivity; ingress-egress and access constraints: rendering the project uneconomical: and/or not meeting the purpose and need for developing a community and enhancing the economic situation in Lincoln County.

3.4.2.1 Scenario A: Initial Development Concept

Scenario A, which was initially presented as CSI's master plan, showed a network of interconnected open space areas, which wrapped and bisected residential and commercial development and then connected to the edges of CSI property where it connected to surrounding BLM properties. In this scenario, the open space network was proposed as the reserve design (RCI Figures 2 and 7a, included in Appendix L).

In evaluating Scenario A, both the biological advisors and the TSC determined that the concept presented numerous concerns related to existing wildlife corridors, habitat fragmentation and the magnitude of reserve edge effects. The reason why Scenario A was dismissed is because the proposed wildlife corridors did not provide significant habitat value, were easily accessible by the public, and the network of open space created significant edge length between the reserve areas and the development. While this scenario would use the washes as open space/reserve areas, the design would fragment habitat and not appreciably benefit species or their habitat.

In order to explore the corridor concept further, the biological advisors evaluated the functionality of east-west corridors through the CSI lands using several scenarios. RCI Figures 7b through 7d illustrate these scenarios, and the subsequent evaluations are briefly described below.

3.4.2.2 Scenario B: Three Development Envelopes

Scenario B consisted of the following:

- Three development envelopes would be created by equally distributing three east-west habitat corridors across the CSI lands, with one corridor at the northern end. These east-west corridors would be a minimum of 1,000 feet wide.
- One north-south habitat corridor, a minimum of 1,000 feet wide, would be created along Meadow Valley Mountains, parallel to the CSI lands.

This scenario illustrated by RCI Figure 7b in Appendix L reduces both habitat fragmentation and edge effects that accompany Scenario A. However, property development would require property ingress and egress routes, utility construction and maintenance. Roads and utilities would be brought to the property from the south. Thus, the east-west habitat corridors would be disturbed by utility and road crossings. The east-west habitat corridors also would increase the development edge length and create an unacceptable level of human-wildlife interface. For these reasons, Scenario B was dismissed from further consideration.

3.4.2.3 Scenario C: Two Development Envelopes

Scenario C consisted of the following:

- Two development envelopes would be created by equally distributing two east-west habitat corridors across the CSI lands. One corridor would extend near the county line, and the other corridor would extend at the northern end of the CSI lands. The east-west corridors would be a minimum of 1,000 feet wide.
- One north-south habitat corridor, a minimum of 1,000 feet wide, would be created along Meadow Valley Mountains, parallel to the CSI lands to the east.
- The single habitat corridor between two development envelopes would provide a linkage between the east and west sides of the CSI lands (RCI Figure 7c, included in Appendix L). However, ingress and egress routes and utilities construction and maintenance would fragment the corridor and introduce unacceptable human-wildlife interface. Creation of the central corridor increases the development edge length and potentially takes land away from a larger reserve area. For this reason, Scenario C was dismissed from further consideration.

3.5 COMPARISON OF THE ALTERNATIVES

This section includes a comparison of the components of the alternatives, with specific reference to the goals of the project. Table 3-14 highlights the components of the three alternatives considered, a comparison of the effects alternatives on each resource topic are presented in Table 3-15.

3.5.1 No Action Alternative

Under the No Action Alternative, the CSI MSHCP would not be implemented and incidental take and Section 404 permits would not be issued to CSI for the development of CSI lands in Lincoln County. Thus, the overall purpose of the project for the applicant would not be fulfilled. Without the appropriate permits, no development activities would occur on these lands, resulting in no adverse effects to special status species, WOUS, and other resources.

As a result of selecting the No Action Alternative, CSI would likely subdivide private land for sale to individual landowners. These landowners would be responsible for obtaining required incidental take permits and Section 404 permits from the USFWS and the Corps, respectively. If this occurred, up to 29,002 acres of land could be available for development activities or other uses. However, because of infrastructure constraints, the development of all private lands (21,454 acres) would be unlikely and only small portions of the lease lands (7,548 acres) would likely be developed for roads and other infrastructure. CSI lease lands in Lincoln County would remain an island in the middle of the private lands and would not be managed by BLM in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species.

3.5.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

Under the Preferred Alternative, development of a planned community would occur on 20,716 acres of CSI private lands in a phased approach. Development of lands would occur on up to 2,000 acres per year for the first eight years. The configuration of the lands would be altered to optimize maximum connectivity and reduced edge to interior ratio, thereby minimizing effects of habitat fragmentation and loss on affected species and impacts to WOUS and cultural resources. A perpetual conservation easement along the Pahranagat Wash incised ephemeral channel and buffers along other WOUS in the Development Area would mitigate for effects to WOUS, along with restoration of 63.4 acres of WOUS. Other conservation measures and an adaptive management plan would ensure that effects of development and associated actions would be minimized where possible for WOUS, cultural resources, and Covered Species. The design of the town's planned community would incorporate many aspects of green design to minimize effects to the surrounding environment and reduce energy and water consumption. Within the CSICL, 13,767 acres of land, including critical habitat for the desert tortoise, would be protected.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Federal Permits			
Endangered Species Act (ESA) Section 10(a)(1)(B) incidental take permit	No incidental take permit would be issued to CSI in association with the CSI MSHCP. Therefore, CSI would not be issued a Section 10 permit to take federally listed species on private lands. If the No Action Alternative was chosen, CSI could sell their lands to individual landowners. Individual landowners would be responsible for obtaining required permits, in conjunction with a Corps permit.	An incidental take permit would be issued to CSI based on a Multiple-Species Habitat Conservation Plan (CSI MSHCP). Section 7 consultation would occur on detention basins in the BLM utility corridor and on the management plan for the CSICL.	An incidental take permit would be issued to CSI based on a regional HCP. Section 7 consultation would occur on detention basins in the BLM utility corridor.
Clean Water Act (CWA) Section 404 permit	No Section 404 permit would be issued to CSI under the No Action Alternative. If CSI were to sell lands to individual landowners, then the landowners would be responsible for obtaining required permits.	An individual Section 404 permit would be issued to CSI for fill placement in waters of the United States (WOUS/Desert Dry Washes) on the CSI property and BLM utility corridor in Lincoln County, Nevada.	An individual Section 404 permit would be issued to CSI for fill placement in waters of the United States (WOUS/Desert Dry Washes) on the CSI property and BLM utility corridor in Lincoln County, Nevada.
NEPA Compliance	This document will serve as the NEPA compliance document for an incidental take permit and Section 404 permit and related activities and the reconfiguration of land holdings and the management of the BLM leased lands in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species. In addition, this document serves as the NEPA compliance document for the detention basins required for addressing flood control associated with the CSI Development, which would be constructed within the BLM utility corridor west of U.S. Highway 93 in Lincoln County. Water supply is not included as a component of the alternatives, as it is being addressed in separate NEPA documents related to groundwater development of southeastern Nevada. However, the amount of development of private lands possible under the alternatives would be dependent upon the amount of water available as a result of these water supply projects.		
Lands Included in Alternative			
Total area and land ownership	Ownership of lands included in this alternative is as follows: ▪ Approximately 21,454 acres of private property ▪ Approximately 7,548 acres of lease lands in Lincoln County, 99-year with an automatic 99-year lease extension ▪ Total lands considered in this alternative: Approximately 29,002 acres.	Ownership of lands included in the Preferred Alternative is as follows: ▪ Approximately 21,454 acres of private property (i.e., Development Area) ▪ Approximately 7,548 acres of lease lands in Lincoln County, 99-year with an automatic 99-year lease extension ▪ 6,219 acres of lease lands in Clark County - 99-year with an automatic 99-year lease extension (this land is included in this alternative only to serve as mitigation for take of desert tortoise under the CSI Lincoln County MSHCP) ▪ BLM utility corridor - 3,331 acres in utility corridor west of Development Area	Ownership of lands included in this alternative is as follows: ▪ 21,454 acres of private property (i.e., Development Area) ▪ 7,548 acres of lease lands in Lincoln County, 99-year with an automatic 99-year lease extension ▪ BLM utility corridor - 3,331 acres in utility corridor west of Development Area ▪ Total lands (i.e., project area) considered in this alternative: 32,333 acres.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
		▪ Total lands (i.e., project area) considered in this alternative: 38,552 acres.	
Management of the Development Process			
	CSI would not construct a master planned community on CSI private lands. If the No Action Alternative is chosen, CSI could sell lands to individual landowners, and development and planning would occur on private property on a parcel-by-parcel basis.	Construction and planning would occur across all private lands as part of a master planned community development. This planning would result in the formation of a new town.	Actions would be the same as included under the Preferred Alternative.
Use of Lease Lands			
99-year with an automatic 99-year lease extension from the BLM for approximately 7,548 acres of property in Lincoln County	Land leased from the BLM in Lincoln County would be available for the full suite of activities authorized in the Land Lease Agreement. The uses for this land could include constructing and operating roads, utility lines, storage facilities and wells, and for any other lawful purpose which the Secretary of the Interior may authorize, subject only to the requirements of the Nevada-Florida Land Exchange Authorization Act of 1988 and to reasonable requirements of the Secretary of Interior may establish for the protection of the desert tortoise and any other species for fish, wildlife, or plants.	Subject to BLM's consent, approximately 7,548 acres of land leased by CSI from the BLM in Lincoln County would be protected as part of the CSICL. These lands would be adjacent and contiguous with 6,219 acres of CSI lease land in Clark County. Land leased from BLM in Lincoln County and Clark County would only be available for the following uses authorized under the lease agreement: ▪ Nonmotorized trails ▪ Conduct scientific studies in consultation with USFWS (test/control plots) ▪ Headstart tortoise relocation program ▪ Education kiosks ▪ A management plan would be developed to manage the CSICL within one year of incidental take permit issuance.	Land leased by CSI from the BLM in Lincoln County would be available for the full suite of activities authorized in the Land Lease Agreement. The uses for this land could include constructing and operating roads, utility lines, storage facilities and wells, and for any other lawful purpose which the Secretary of the Interior may authorize, subject only to the requirements of the Nevada-Florida Land Exchange Authorization Act of 1988 and to reasonable requirements of the Secretary of Interior may establish for the protection of the desert tortoise and any other species for fish, wildlife, or plants.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Activities			
Development and Construction Activities	CSI would not develop and construct residential development, public buildings, hotels, resorts, casino, commercial and light industries, roadway, bridge, and a plant nursery on CSI private lands. If the No Action Alternative is chosen, CSI could sell lands to individual landowners, and future development plans would be the responsibility of individual landowners. Future development by individual landowners would not be part of a master planned community, therefore opportunities to implement comprehensive and integrated conservation design features would be limited. Because of the lack of infrastructure, development of CSI private lands by individual landowners would likely not occur across the entire 21,454 acres of private land.	Activities would be implemented on 20,716 acres. New town development and construction activities would include residential development; public buildings; hotels, resorts, and casinos; commercial and light industrial development; roadway construction and maintenance; bridge construction and maintenance; and a plant nursery. The new town consisting of a planned community would eventually include approximately 111,000 residential dwelling units (5.0 residential units per gross acre) based on the Lincoln County Development Agreement.	Activities would be implemented on up to 21,454 acres. New town development and construction activities would be the same types as described for the Preferred Alternative. The extent of activities would be greater than the Preferred Alternative to support a higher density of development (6.5 residential units per gross acre). The new town consisting of a planned community would eventually include approximately 131,879 residential dwelling units.
Recreational Facilities and Open Space	CSI would not construct recreational facilities and develop open space on CSI private lands. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. However, individual landowners would have no obligation to construct community recreational facilities, trails, or open space.	Recreational facilities (e.g., golf courses, parks, sports fields, pedestrians and equestrian trails) would be developed. Corridors along preserved and restored desert dry washes and adjacent upland buffer habitat would be preserved.	Activities would be the same types and of the same design as described for the Preferred Alternative. The extent of activities would be greater than the Preferred Alternative to support a larger development.
Utility Infrastructure	CSI would not implement utility infrastructure activities on CSI private lands. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. Individual landowners would have no obligation to construct community utility infrastructure.	Utility infrastructure activities would be implemented on CSI privately-owned land. Utility infrastructure would be developed to meet the needs of the new town, which consists of a planned community development on CSI lands in Lincoln County, Nevada. Utilities would include power (electric, gas and solar); wastewater collection, treatment, and disposal; reclaimed water facilities and operations; stormwater facilities; solid waste disposal; and telecommunications.	Utility infrastructure activities would be implemented on CSI privately-owned and lease land (to the full extent allowed under the Land Lease Agreement). This would include activities on up to 7,548 acres of lease lands in Lincoln County. Activities would be the same types and of the same design as described for the Preferred Alternative.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Water Supply Infrastructure and Management	CSI would not implement activities related to water use and maintenance for the CSI development in Lincoln County. If the No Action Alternative is chosen, CSI could sell lands to individual landowners; Individual landowners would be responsible for developing water and sewer facilities.	Activities related to water use and maintenance would include treatment of water, monitoring wells, relocated production wells for existing permitted rights, storage facilities, distribution facilities, effluent supply use and management, on-site and off-site disposal of excess treated effluent, and possibly injection wells.	Activities would be the same types and of the same design as described for the Preferred Alternative, although facilities would potentially need to be larger to accommodate a larger number of residential dwelling units.
Stormwater Management Measures	CSI would not implement stormwater management measures on CSI private land and within the BLM utility corridor. If the No Action Alternative is chosen, CSI could sell lands to individual landowners, and the individual landowners would be responsible for stormwater management. Stormwater projects to protect U.S. Highway 93 may be implemented by NDOT and Lincoln County without any CSI action.	Up to eight detention basins, totaling up to 244 acres could be constructed within the BLM utility corridor. Stormwater management measures would be implemented in a comprehensive way to protect the new town from flooding and to protect water quality during stormflow events. These measures would involve the preservation of certain WOUS and the alteration of other WOUS, according to the Section 404 permit; detention and retention basins; stormwater conveyance; and culvert placement.	Activities would be the same types and of the same design as described for the Preferred Alternative. The extent of activities would be greater than the Preferred Alternative to support a larger development. Activities would include up to eight detention basins, totaling up to 244 acres could be constructed within the BLM utility corridor.
Extent of Activities	CSI would not implement proposed activities on CSI private lands. If the No Action Alternative is chosen, activities could occur within the 21,454-acre private land if those lands were sold to individual landowners and on the 7,548 acres of CSI lease lands, if appropriate permits were obtained.	Activities could occur on up to 20,960 acres (20,716 acres within the Development Area, when adjusted for protected WOUS (25.2 acres), and the upland buffer (712.5 acres).	Activities could occur on up to 28,879 acres [up to 21,087 acres within the Development Area, when adjusted for protected WOUS (22.6 acres), and the upland buffer (344.8 acres); up to 244 acres in the BLM utility corridor; and up to 7,548 acres on the CSI lease lands in Lincoln County].

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Water Demand and Growth			
	A ESA Section 10 permit and CWA Section 404 permit would not be issued to CSI for the proposed development on CSI private lands; therefore, the 70,000 afa would not be needed for development on CSI private lands. If the No Action Alternative is chosen, CSI could sell their private lands to individual landowners. Because of the unknown amount of development that could potentially occur from individual landowners, the amount of water supply needed would be unknown. The size of development would be dependent upon the amount of available water supply. However, because of the lack of infrastructure, development of CSI private lands by individual landowners would likely not occur across the entire 21,454 acres of private land and the demand for water would be less than 70,000 afa.	Approximately 70,000 afa would be needed to support the development at buildout. The extent of the final development may be less than that proposed due to water supply limitations.	Approximately 85,000 afa would be needed to support the development at buildout. The extent of the final development may be less than that proposed due to water supply limitations.
Resource Management Features			
Timing of activities	Activities on CSI private lands and lease lands in Lincoln County would not occur. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. Individual landowners would be responsible for obtaining environmental and land use permits for development of specific parcels. Development of parcels would proceed over an undetermined period of time.	Phased development would proceed over the course of the 40-year permit. Development would be limited to 2,000 acres per year for the first eight years.	Activities on privately owned and lease lands in Lincoln County would commence upon issuance of an incidental take permit and other required regulatory permits.
Land configuration	The existing land configuration would be maintained. Lease lands would remain an island within the privately-owned land (Figure 3-1).	In informal consultation with the USFWS, CSI and BLM agreed to reconfigure the private and lease land to consolidate the private land to the west and the lease land to the east side of the property (Figure 3-2).	CSI and BLM would reconfigure the layout of private and lease land, consolidating the private land to the west and south and the lease land to the north and east side of the property (Figure 3-5).

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Resource management areas	CSI would not implement resource management measures on the approximately 7,548 acres of lease land in Lincoln County. The 6,219 acres of CSI lease land in Clark County would not be counted as a mitigation measure for activities on lands in Lincoln County to desert tortoise. The 6,219 acres would still be added to the CSICL, as described in ENTRIX et al. 2005.	The total acreage of lands included in the CSICL would be approximately 13,767 acres and would form a contiguous preservation belt. Subject to BLM's consent, approximately 7,548 acres of land leased by CSI from the BLM in Lincoln County would be protected as part of the CSICL. These lands would be adjacent and contiguous with 6,219 acres of CSI lease land in Clark County which would also be protected part of the CSICL. The management and any restoration, as developed in the management plan, of the 6,219 acres of CSI lease land in Clark County would be considered as a mitigation measure for effects of activities on lands in Lincoln County to desert tortoise under the CSI MSHCP.	No specific measures would be implemented. The management of 6,219 acres of CSI lease land in Clark County would not be counted as a mitigation measure for activities on lands in Lincoln County to desert tortoise. The 6,219 acres would still be added to the CSICL, as described in ENTRIX et al. 2005.
On-site mitigation	CSI would not implement mitigation measures for Covered Species identified in the CSI MSHCP. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. The individual landowners would then be responsible for negotiating mitigation measures with the appropriate regulatory agency.	Mitigation measures for Covered Species identified in the CSI MSHCP would be implemented. Land conserved within the Development Area and CSICL would allow for on-site mitigation on privately owned and leased land.	Substantially fewer acres of privately owned and lease land would be conserved compared to the Preferred Alternative, which would reduce opportunities for on-site mitigation for Covered Species on private land and increase the need for off-site mitigation on adjacent federal land.
Conservation Measures			
Desert tortoise, banded Gila monster, and western burrowing owl	CSI would not implement conservation measures for the desert tortoise, banded Gila monster, and western burrowing owl, including avoidance, minimization, and mitigation measures proposed in the MSHCP. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. Individual landowners would be responsible for negotiating incidental take permits and associated conservation measures for these species.	A series of conservation measures would be implemented for the desert tortoise, banded Gila monster, and western burrowing owl, including avoidance, minimization, and mitigation measures. Key mitigation measures would include: ▪ Clearance of desert tortoise and western burrowing owl prior to land disturbance. ▪ NDOW's 2007 banded Gila monster protocol would be followed. ▪ Regional fencing, refuse disposal, and education programs would be designed to protect Covered Species from the potential effects associated with the interaction of the development of a new town and the covered species.	A series of conservation measures would be implemented for the desert tortoise, banded Gila monster, and western burrowing owl, including avoidance, minimization, and mitigation measures. Key mitigation measures would include: ▪ Clearance of desert tortoise and western burrowing owl prior to land disturbance. ▪ NDOW's 2007 banded Gila monster protocol would be followed. ▪ Regional fencing, refuse disposal, and education programs would be designed to protect Covered Species from the potential effects associated with the interaction of the development of a new town and the covered species.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
		▪ Mitigation fees of $800 (consistent with the CSI MSHCP) would be paid for each acre of desert tortoise habitat developed. Development of approximately 20,716 acres are estimated to generate approximately $16.6 million. ▪ Mitigation fees would be paid as lands are disturbed. Land development would be up to 2,000 acres per year for the first eight years. ▪ Additional fees totaling $750,000 would be contributed by CSI to fund research and activities that would further conservation efforts for the desert tortoise. During this period, CSI, USFWS and BLM will evaluate the benefits of the CSI MSHCP conservation measures on an annual basis as outlined in the adaptive management section. 13,767 acres (approximately 7,548 acres in Lincoln County and 6,219 acres in Clark County) of desert tortoise critical habitat would be managed to benefit the MSHCP Covered Species in the CSICL.	▪ Mitigation fees of $550 would be paid for each acre of desert tortoise habitat developed. Development of up to 21,087 acres is estimated to generate up to $11.6 million. Up to an additional $4.2 million may be generated for Covered Activities in 7,548 acres of lease land in Lincoln County, for a total of up to approximately $15.8 million. ▪ Mitigation fees would be paid as individual land parcels are developed (consistent with other Regional HCPs in Nevada).
Moapa dace and Virgin River chub	CSI would not implement avoidance, minimization, and conservation measures that involve the Moapa dace and Virgin River chub for impacts to WOUS as a result of the proposed development in Lincoln County. If individual permits were to be obtained, individual landowners would be responsible for negotiating incidental take permits/statements and associated avoidance, minimization, and conservation measures for these species.	CSI would implement avoidance, minimization, and conservation measures for WOUS, listed below.	CSI would implement the avoidance, minimization, and conservation measures as described for the Preferred Alternative.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Waters of the United States (WOUS)	A section 404 permit would not be issued, therefore there would be no impacts to WOUS. CSI would not implement avoidance, minimization, and mitigation measures for impacts to WOUS from development activities. If the No Action Alternative is chosen, CSI could sell their land to individuals. Individual landowners would be responsible for obtaining Nationwide or Individual Section 404 permits from the Corps.	A series of mitigation measures would be implemented to offset impacts to WOUS from development activities. These would include avoidance, minimization, and mitigation measures and would involve preservation and restoration of certain desert dry washes. These lands would be placed in easements. Upland buffer zones would be created in consultation with USFWS along both sides of the Pahranagat Wash incised ephemeral channel and along both sides of existing preserved desert dry washes (737.7 acres in total). These lands, in combination with 25.2 acres of preserved unimpacted WOUS and 59.8 acres of restored WOUS and 67.4 acres of surrounding upland buffer zone, would comprise 864.8 acres of the 21,454-acre Development Area and would be placed in easements. As a portion of the CSICL, 5.1 acres of additional existing WOUS would be protected, and 3.6 acres of WOUS would also be restored. A master-planned development configuration would meet multiple resource conservation needs. Contingency measures would be provided in case restoration efforts fail to meet success criteria. Financial guarantees and monitoring would be provided.	Conservation measures for WOUS (desert dry washes) would be the similar to those described for the Preferred Alternative, although 22.6 acres of preserved, unimpacted WOUS, 69.8 acres of restored WOUS, and 344.8 acres of upland buffer habitat associated with the preserved WOUS within the 21,454-acre Development Area would be placed in easements totaling 437.2 acres to protect these WOUS. Because CSI lease land would not be managed as conservation lands, the potential for impacts to WOUS would be greater in that they would occur on additional land (approximately 7,548 acres with 6.3 acres of existing WOUS).

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Weed management and fire rehabilitation measures	Comprehensive weed management and fire rehabilitation measures identified in the CSI MSHCP would not be implemented. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. Individual landowners would be responsible for weed management and fire rehabilitation.	Conservation measures related to stormwater and waste water treatment, Chemical Application Management Plan (CHAMP), on-site and regional weed management, and regional fire rehabilitation would be developed and implemented, which would minimize potential impacts from weeds and fires, and benefit terrestrial wildlife and plant species.	Conservation measures related to stormwater and wastewater treatment, CHAMP, on-site and regional weed management, and regional fire rehabilitation would be developed and implemented, which would minimize potential impacts from weed and fires, and benefit terrestrial wildlife and plant species.
Other conservation measures	CSI would not implement building, water, and conservation standards consistent with Lincoln County regulations, because no development, as proposed, would occur on CSI private land. If the No Action Alternative is chosen, CSI could sell lands to individual landowners, Individual landowners would be responsible for building standards, water conservation standards, and other conservation standards consistent with Lincoln County regulations. Because any future development would not be part of a master planned community, opportunities to implement comprehensive and integrated conservation design features would not be available.	Building standards, water conservation standards, and other conservation standards would be implemented consistent with Lincoln County regulations. Additionally, the town would consist of an environmentally-sensitive community, which would include, among others: Green building standards adopted by the SNHBA (2006); Nursery operations that would contribute to conservation measures; Native plant material would be salvaged and used to support xeric landscaping activities; Additional conservation measures implemented as part of GID service rules, as well as charter declaration of conditions, easements and restrictions, for water conservation and demand management, as well as other conservation standards. Enforcement measures would be provided.	Conservation measures would be implemented as described for the Preferred Alternative.

Table 3-14 Comparison of the Alternatives Analyzed in the CSI Planned Development Project Environmental Impact Statement

Component	No Action Alternative	Preferred Alternative Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features	Alternative 1 Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features
Adaptive Management Framework			
	CSI would not implement an adaptive management plan for Covered Species. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. Individual landowners would be responsible for an adaptive management framework.	An adaptive management framework would be implemented for the Preferred Alternative to address project permitting, phased activities, and appropriate conservation measures. Adaptive management activities would be implemented to protect habitat for terrestrial species within the Development Area (e.g., desert tortoise, banded Gila monster, and western burrowing owl) and for aquatic and riparian habitat outside of the project area (e.g., Muddy Springs Area and Muddy River). Activities would be adaptively managed by monitoring demonstrated effects of those activities on undisturbed portions of the Development Area and lands outside of the Development Area.	An adaptive management framework would be implemented to address project permitting and appropriate conservation measures. Adaptive management activities would be implemented to protect aquatic and riparian habitat outside of the project area (e.g., Muddy Springs Area and Muddy River), although they would be somewhat limited in scope, as compared to the Preferred Alternative. Adaptive management activities for habitat within the Development Area for terrestrial species would be limited, as they would only occur in response to effects of activities in relationship to surrounding lands, not to lands within the Development Area.
Funding and Coordination			
	CSI would not fund and coordinate mitigation, avoidance, and conservation measures in the CSI MSHCP. If the No Action Alternative is chosen, CSI could sell lands to individual landowners. Individual landowners would be responsible for funding and coordination of incidental take and Section 404 permits.	Coordination would occur through the creation of an Executive Committee, Technical Advisory Committee, and HCP Administrator. These three entities would oversee the management of the CSI MSHCP for the length of the incidental take permit. Desert tortoise research and recovery advisors may assist the HCP Administrator as needed or directed by the EC. A fee of $800/acre would apply to any development within the project area of the CSI MSHCP. These fees would be included in a Section 10 Trust Fund.	Funding and coordination of the incidental take permit would be implemented through a regional HCP. A fee of $550/acre would apply to any development within the project area via a regional HCP.

Table 3-15 Alternatives Comparison Summary

Impact Topic	No Action Alternative	Preferred Alternative	Alternative 1
Vegetation	0	-	-
Wildlife	0	-	-
Special Status Species	0	-	-
Waters of the United States	0	-	-
Hydrology and Water Quality	0	0	0
Cultural Resources	0	-	-
Soils and Geologic Resources	0	-	-
Ecologically Critical Areas	0	-	-
Wilderness Areas	0	-	-
Visual Resources	0	-	-
Air Quality	0	-	-
Transportation and Circulation	0	0	0
Noise	0	-	-
Land Use, Planning, and Zoning	0	0	0
Recreation Resources	0	+	+
Public Services and Utilities	0	+	+
Socioeconomics	0	+*	+*
Environmental Justice	0	+	+
Hazardous Materials	0	0	0

- = adverse effects
+ = beneficial effects
0 = neutral effects
* = significant effects

3.5.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

Under Alternative 1, all CSI land (private and lease) in Lincoln County would be available for immediate development activities or authorized uses. The private and lease lands would be reconfigured, with lease lands extending along the northern and eastern borders of the project area. These CSI lease lands in Lincoln County would not be added to the CSICL under this alternative, although a conservation easement along the Pahranagat Wash incised ephemeral channel would be established. Up to 20,879 additional residential dwelling units would be included in this alternative, as compared to the Preferred Alternative. Housing densities would be greater, at 6.5 residential units per gross acre compared to 5.0 residential units per gross acre under the Preferred Alternative. Development and construction activities would be the same types as described for the Preferred Alternative.

Some of the same conservation measures would be implemented as described for the Preferred Alternative, but development would not be phased, and therefore a phased approach for implementation and monitoring of conservation measures would not be implemented. The adaptive management plan would be structured the same as under the Preferred Alternative, although lands within the project area could only be monitored in comparison with lands outside of the CSI lands. Substantially fewer acres of privately owned and lease land would be conserved compared to the Preferred Alternative, which would reduce opportunities for on-site mitigation on private land and increase the need for off-site mitigation on adjacent federal land (as is the case with other HCPs in Nevada). A greater level of impacts to WOUS would also occur, as a greater number of acres of WOUS in the Development Area and BLM utility corridor would be impacted by Covered Activities and activities in the lease lands could affect the WOUS located there.

Compared to the Preferred Alternative, all private lands would be built out, more dwelling units would be constructed in the Development Area, and 7,548 acres less land would be protected in conservation lands, which would be likely to result in greater adverse effects to listed species, WOUS, and other resources.

3.6 PREFERRED ALTERNATIVE

The USFWS has identified the Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features alternative as the Preferred Alternative. The Preferred Alternative provides for species conservation and planning, while allowing the applicant to better manage growth of the proposed community, as development build out would be phased over a period of 40 years. As part of the phased approach to development, there would be a limit of 2,000 acres of disturbance per year for the first eight years within the CSI private lands in Lincoln County, although the anticipated amount of disturbance per year during those eight years would be less than the limit. The Preferred Alternative also provides a coordinated process for permitting and mitigating the take of Covered Species instead of a project-by-project approach. In consultation with the USFWS, the applicant has proposed a conservation strategy that provides for the establishment of the CSICL on approximately 13,767 acres of leased land by the applicant. The proposed CSICL would be permanently managed for the conservation of the desert tortoise and other Covered Species. The applicant also has proposed avoidance, minimization, and additional mitigation for the Covered Species. The CSI MSHCP is intended to ensure that the effects of authorized incidental take of federally listed species will be adequately minimized and mitigated to the maximum extent practicable by the applicant. The No Action Alternative would not allow reasonable development consistent with the general plans of the applicant (CSI) and, therefore, was not considered for selection as the Preferred Alternative.

3.7 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is the alternative that best promotes the national environmental policy as expressed in NEPA's Section 101. This can mean the alternative that causes the least damage to the biological and physical environment; it can also mean the alternative that best protects, preserves, and enhances historic, cultural, and natural resources (CEQ 1981).

The USFWS, as lead agency, identifies the No Action Alternative as the Environmentally Preferable Alternative. The No Action Alternative would result in the least damage to the biological and physical environment through:

- resulting in no incidental take to desert tortoise and other special status species,
- resulting in no effects to WOUS, and
- resulting in no effects to vegetation, wildlife, soils, and other biological and physical aspects of the environment in the Coyote Spring Valley.

This alternative is not the same as the Preferred Alternative, nor is the USFWS required to select the Environmentally Preferable Alternative as the Preferred Alternative.

3.8 LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE

Under Section 404(b)(1) Guidelines, developed by EPA in conjunction with the Corps, no discharge into WOUS can be permitted if a practicable alternative with a less adverse impact on the aquatic environment is available, unless the identified alternative would result in significant adverse environmental consequences to other resources. The Corps requires the NEPA document (in this case, an EIS), being prepared for an action requiring a Section 404 permit, to identify the Least Environmentally Damaging Practicable Alternative (LEDPA) on the aquatic environment in accordance with the Section 404(b)(1) Guidelines. For the purposes of Section 404(b)(1) Guidelines, only alternatives that meet the project purpose, as defined in the Section 404 permit application, are considered for identification as the LEDPA. Therefore, the No Action Alternative was not included in this LEDPA identification process, as it would not meet the project purpose.

For the project analyzed in this EIS, the LEDPA is the Preferred Alternative - Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features, as it results in a smaller acreage of WOUS (31.7 acres) affected by discharge or fill, as compared to Alternative 1 (34.9 acres plus up to 6.3 additional acres) and a greater amount of protection for avoided WOUS through greater buffer widths.

SECTION 4

Affected Environment

Section 4: Affected Environment

This section summarizes the physical, biological, social, and economic environments of the alternatives considered and the effects of implementing each alternative on that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in the alternatives section.

4.1 ENVIRONMENTAL SETTING

4.1.1 Land Management in Lincoln County

Table 4-1 shows the areas of federal, state, and private lands in Lincoln County. Lands surrounding the Coyote Springs Investment LLC property include the Desert National Wildlife Refuge (DNWR) lands to the west of U.S. Highway 93 and BLM lands to the north, east, and south. Figure 4-1 shows land ownership within the vicinity of the project area considered for this EIS.

Table 4-1 Landownership in Lincoln County, Nevada

Land Ownership	Acres in Lincoln County
Federal Lands	
Bureau of Land Management	5,604,464
Department of Defense	772,200
U.S. Fish and Wildlife Service	267,187
U.S. Forest Service	29,367
State Lands	
Nevada Parks and Recreation	4,775
Nevada Wildlife Reserve	954
Private Lands	122,508
Total	6,801,455
Source: Bureau of Land Management GIS data, Ely Field Office	

CSI lands include a mix of privately owned property (21,454 acres) and land leased from BLM (7,458 acres) in Lincoln County and leased lands in Clark County (6,219 acres). Land surrounding the CSI lands is primarily public land. Land use on BLM-leased land has been developed by BLM and USFWS to protect and preserve desert tortoise habitat. The land within the Development Area, as well as surrounding land, is designated critical habitat for the desert tortoise.

CSI lands within the project area are located within the Mormon Mesa Critical Habitat Unit (CHU) of the Northeastern Mojave Recovery Unit for the desert tortoise, as identified in the 1994 Desert Tortoise Recovery Plan (USFWS 1994). The Mormon Mesa CHU encompasses approximately 427,000 acres. This is part of approximately 6.4 million acres of critical habitat designated in the southwestern United States, of which 1,224,400 acres are located within Clark and Lincoln counties in Nevada. The Recovery Plan initially established DWMAs, which grouped areas of critical habitat for management purposes. The approximately 21,454 acres of CSI lands are located within designated critical habitat and comprise approximately one-third of a percent (0.34 percent) of the total designated critical habitat.

Federal lands lying west of the project area are within the DNWR managed by USFWS (except to the extent the 0.5-mile-wide BLM utility corridor adjacent to and west of U.S. Highway 93 is managed by the BLM). The 1.6-million-acre DNWR contains approximately 150,000 acres of desert tortoise habitat. Critical habitat for the tortoise was not designated in the DNWR because land management practices were determined to provide sufficient protection for the tortoise.

Nellis Air Force Base (AFB), located southwest of the project area, has a Desert Military Operations Area that encompasses the airspace over the entire project area (Figure 4-1). This airspace is a special use airspace that

provides maneuvering room for military aircraft training and separates this training from other air traffic (United States Air Force [USAF] 2007). The Desert Military Operations Area occurs from 100 feet above ground level (AGL) to 17,999 feet above mean sea level (MSL). Air Traffic Control Assigned Airspace (ATCAA) is also within this area, from 18,000 feet MSL to an altitude assigned by the Federal Aviation Administration (FAA). This airspace provides additional maneuvering airspace for training. The FAA assigns the ATCAA to Nellis AFB on an as-needed basis (USAF 2007). MOA airspace above the project area is as low as 100 feet above ground level (AGL). Lower flying aircraft, such as helicopters, could potentially fly at these low altitudes.

South of the project area, CSI is currently developing 6,881 acres of land located in Clark County, with 6,219 acres of lease land set aside in conservation lands or conservation easements. That land is currently specified as a PUD, as described under Clark County Comprehensive Planning Development Code 30.24. PUDs allow flexibility through area-sensitive site planning and design. State Route 168 runs along the southern edge of the development in Clark County and beyond the two-lane roadway. This land is managed by the BLM and is designated critical habitat for the desert tortoise. The Las Vegas Resource Management Plan (BLM 1998) specifies the allowable land uses on the land. These land uses were developed by the BLM to protect and preserve desert tortoise habitat. A Class III landfill also is located northwest of the CSI private lands in Lincoln County.

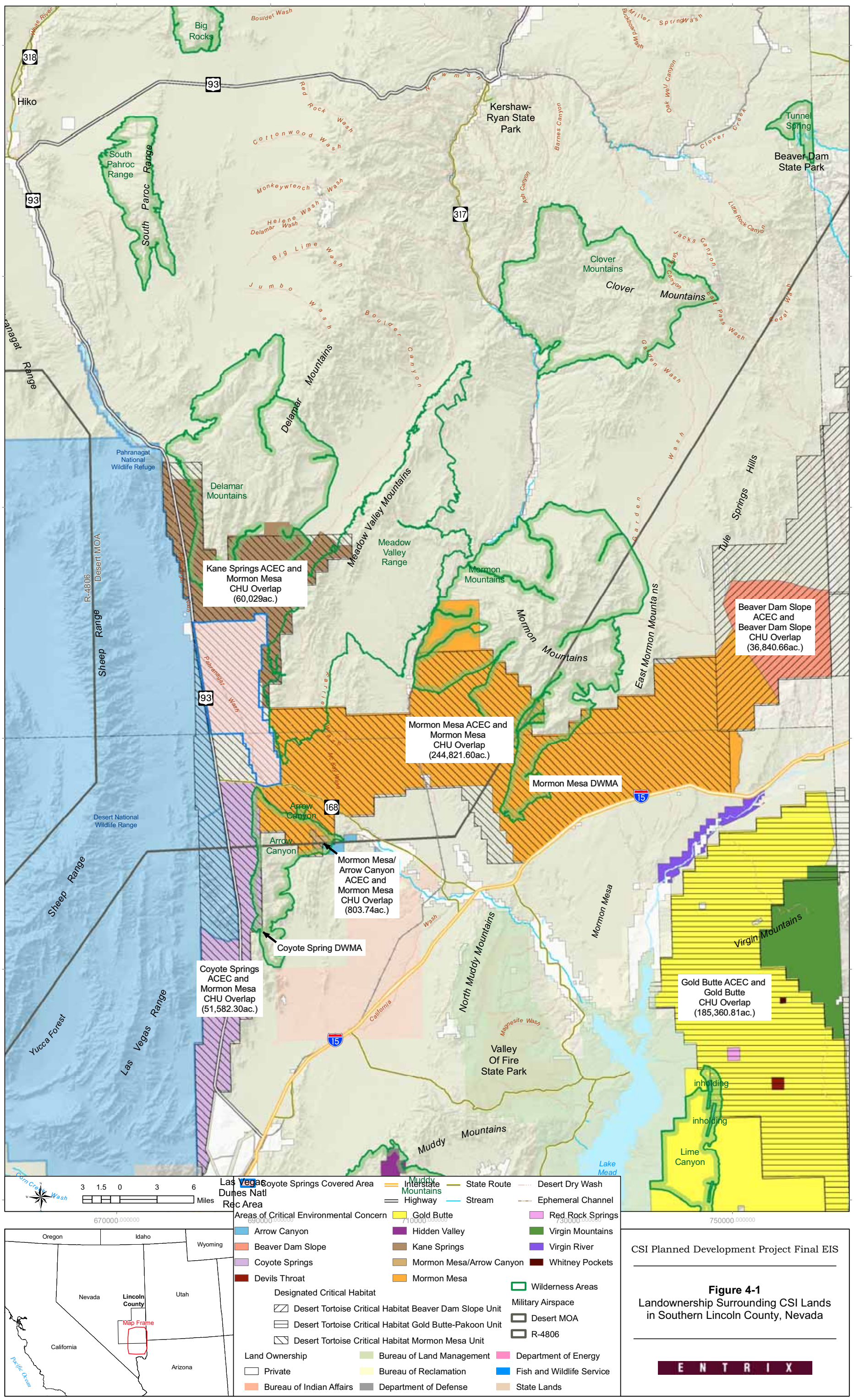
Two ACECs designated within Lincoln County are adjacent to the project area: the Kane Springs and Mormon Mesa ACECs. These ACECs were established under the Caliente Management Framework Plan Amendment for directing land management to meet desert tortoise habitat minimum protection needs. At present, the CSI lands are bounded on the north and east by the Kane Springs ACEC and the Mormon ACEC, respectively. In addition, the Coyote Spring ACEC is adjacent to the southern boundary of the CSI property in Clark County.

To the east and north of the Mormon Mesa and Kane Springs ACECs lie three adjacent wilderness areas managed by the BLM's Ely Field Office (Figures 4-1, 4-11): Delamar Mountains (111,328 acres), Meadow Valley Range (123,488 acres), and Mormon Mountains (157,938 acres) (BLM 2007a). To the south of the CSI lands lies the Arrow Canyon Wilderness (27,530 acres), which is managed by the Las Vegas Field Office (BLM 2008).

Old Highway 93, an abandoned two-lane road, traverses a portion of the property in a generally north-south direction on the eastern side of Pahranagat Wash incised ephemeral channel. The road is currently used by the landowner for access to the land and is also used by NDOW to access several wildlife guzzlers and wildlife survey locations for birds, bats, and other wildlife.

4.1.2 Biological Resources

Coyote Spring Valley is located in the biotic region generally referred to as the Eastern Mojave Desert. However, Coyote Spring Valley has strong biotic relationships with the Great Basin Desert to the north and the Sonoran Desert (Colorado Desert subdivision) to the south. The juxtaposition of Coyote Spring Valley along the periphery of these major biotic regions strongly influences the floral and faunal diversity within the valley.



CSI Planned Development Project Final EIS

Figure 4-1
Landownership Surrounding CSI Lands in Southern Lincoln County, Nevada

ENTRIX

4.1.2.1 Vegetation

4.1.2.1.1 Plant Communities Within and Surrounding Project Area

The vegetation communities within and surrounding the project area are characteristic of the Mojave Desert Scrub Ecosystem (Clark County Department of Comprehensive Planning 2000). Based on the USGS Southwest ReGAP landcover classification system (2005), the dominant plant community within the project area is the Creosotebush-White Bursage Desert Scrub (Figure 4-2). In addition, inclusions of Mojave Mid-Elevation Mixed Desert Scrub, Mixed Salt Desert Scrub, North American Warm Desert Wash, and North American Warm Desert Playa are found within the area. Information collected during field surveys conducted by Resource Concepts, Inc. (RCI) in 2005 and 2006, which included all known potential habitat for sensitive plant species in CSI's lands in Lincoln and Clark counties (primarily in the active channels of the Pahranagat Wash and Kane Springs Wash), was used to ground-truth information available in local databases. However, during these surveys, no individuals of sensitive plant species for which habitat may occur in the project area (three-corner milkvetch [*Astragalus geyeri* var. *triquetrus*], sticky buckwheat [*Eriogonum viscidulum*], or Las Vegas buckwheat [*Eriogonum corymbosum* var. *nilesii*]) were observed.

Generally, vegetation is sparsely distributed and consists of low shrubs, cacti and perennial grasses. Occasional short stature trees are found in the washes. Creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) are dominant in most areas. Mojave yucca (*Yucca schidigera*), barrel cactus (*Ferocactus* sp.), chollas (*Opuntia* spp.) and beavertail pricklypear (*Opuntia basilaris*) also are prevalent, although less frequently found within the Pahranagat Wash alluvial plain. Blackbrush (*Coleogyne ramosissima*) dominated stands occur along the northern extant of the Development Area. Common shrub species identified throughout the area include Mormon tea (*Ephedra* sp.), indigo bush (*Psorothamnus fremontii*), four-winged saltbush (*Atriplex canescens*), hopsage (*Grayia spinosa*), spiny mendora (*Mendora spinencens*), brittlebush (*Encelia farinosa*) and purple sage (*Salvia dorii*). Associated grass species include big galleta, (*Pleuraphis rigida*), Indian ricegrass (*Acnatherum hymenoides*), and several non-native annual species (*Bromus* spp., *Schismus* spp.).

Within the active channel of the Pahranagat Wash, vegetation is generally scarce except along the channel banks, though the species present are primarily the same as in the adjacent badlands and alluvial fans. Older sandbars may support scattered catclaw acacia (*Acacia greggii*), and an occasional small stand of desert willow (*Chilopsis linearis*). The Southwest ReGAP Analysis vegetation database has classified an area within the Pahranagat Wash incised ephemeral channel area as salt cedar or tamarisk (*Tamarix ramosissima)*. However, on-the-ground surveys were conducted on all dry washes on CSI lands in Lincoln County, as well as the BLM utility corridor west of U.S. Highway 93, and identified only two tamarisk stands located in the Pahranagat Wash incised ephemeral channel at the crossing of State Route 168 (Huffman-Broadway Group, Inc. and RCI 2006). These tamarisk stands are located at the southern edge of the lease lands in Clark County. No tamarisk were observed within the project area in Lincoln County.

CSI lands remain in nearly natural ecological condition (The Nature Conservancy 2001) with limited site-specific impacts due to past and current human activities. The area is closed to livestock grazing, mineral entry, and off-road vehicle use. Over the years, there have been various human-based activities on the landscape; however, these have had relatively limited scope (e.g., grazing, borrow pit, scattered two-track roads, paved highways and culverts for wash crossings of paved roadways).

General descriptions of vegetation associations found within project area, as classified by Southwest ReGAP and modified based on site reconnaissance, are as follows.

SONORA-MOJAVE CREOSOTEBUSH – WHITE BURSAGE DESERT SCRUB

This vegetation type is dominated by creosotebush and white bursage. Associated shrub species may include blackbrush (*Coleogyne ramosissima*), Mormon tea, indigo bush, shadscale (*Atriplex confertifolia*), hopsage, desert thorn (*Lycium* sp.) range ratany (*Krameria erecta*), burrobrush (*Hymenoclea salsola*), brittlebush, and purple sage. Common yucca and cacti include Mojave yucca, chollas, and beavertail pricklypear. Associated grass species include fluffgrass (*Erioneuron pulchellum*), Indian ricegrass, and big galleta. Associated forb species may include globemallow (*Sphaeralcea* sp.), desert trumpet (*Eriogonum inflatum*), and *Datura* sp.

The distribution of this vegetation class is typically within the Mojave Desert below 4,000 feet in elevation. It is commonly found in valley bottoms, lowlands, and flatlands.

MOJAVE MID-ELEVATION MIXED DESERT SCRUB

This vegetation class typically occurs in the transition between creosotebush and white bursage and below the lower montane woodlands. It is characterized by the occurrence of creosotebush and white bursage in association with other shrub species, such as blackbrush, California buckwheat (*Eriogonum fasciculatum),* Mormon tea, hopsage, spiny mendora, bladder sage (*Salazaria mexicana*), and Mojave yucca. Associated grass species are similar to those found in the creosote-bursage type.

SONORA – MOJAVE MIXED SALT DESERT SCRUB

Salt desert scrub is found primarily on playas and in intermountain basins and localized depressions where poorly draining silty loam soils develop into a desert pavement. This vegetation class is usually dominated by one or more of the *Atriplex* species, including shadscale (*Atriplex confertifolia*) and fourwing saltbrush (*A. canescens*). Other shrub species may include desert thorn, Mormon tea, hopsage, blackbrush, and creosote.

NORTH AMERICAN WARM DESERT WASH

This landcover classification is characterized by intermittently flooded, linear washes that dissect the adjacent desert scrub communities. Vegetation within the washes is sparse and patchy. Desert willow or catclaw acacia is limited to the older, established sandbars. Vegetation occurring on the banks is typical of the adjacent scrubland.

NORTH AMERICAN WARM DESERT PLAYA

Vegetation within the desert playa land cover is typically sparse. Playas form with intermittent flooding, followed by evaporation, leaving behind a saline residue. Typical species may include saltgrass (*Distichilis spicata*), Indian ricegrass, Tiquillia (*Tiquillia* spp.) and *Atriplex* species.

4.1.2.1.2 Riparian Vegetation in the Upper Moapa Valley along the Muddy River and Some of its Tributaries

In the Upper Moapa Valley along the Muddy River and some of its tributaries, broad-leaf deciduous riparian woodland and riparian scrub vegetation communities represent the Desert Riparian Ecosystem (Clark County Department of Comprehensive Planning 2000). These dense stands of riparian vegetation begin approximately 17 miles downstream of the Development Area where the perennial flow of the Muddy River begins at the springs. Historically, the riparian vegetation bordering the Muddy River consisted of a complex of Fremont cottonwood (*Populus fremontii*), willows (*Salix* spp.), screwbean mesquite (*Prosopsis pubescens*) and velvet ash (*Fraxinus velutina*). However, non-native palm trees (*Washingtonia filifera*), spreading from the spring systems in the Warm Springs area, are increasing in abundance along the upper Muddy River (USFWS 1996). The nonnative salt cedar has replaced much of the native riparian vegetation and is currently the most common riparian species along the middle and lower Muddy River (Provencher and Andress 2004). Mesquite bosques are present on some upper floodplain terraces and along stream banks, alkali sinks, and desert dry washes (ephemeral washes).

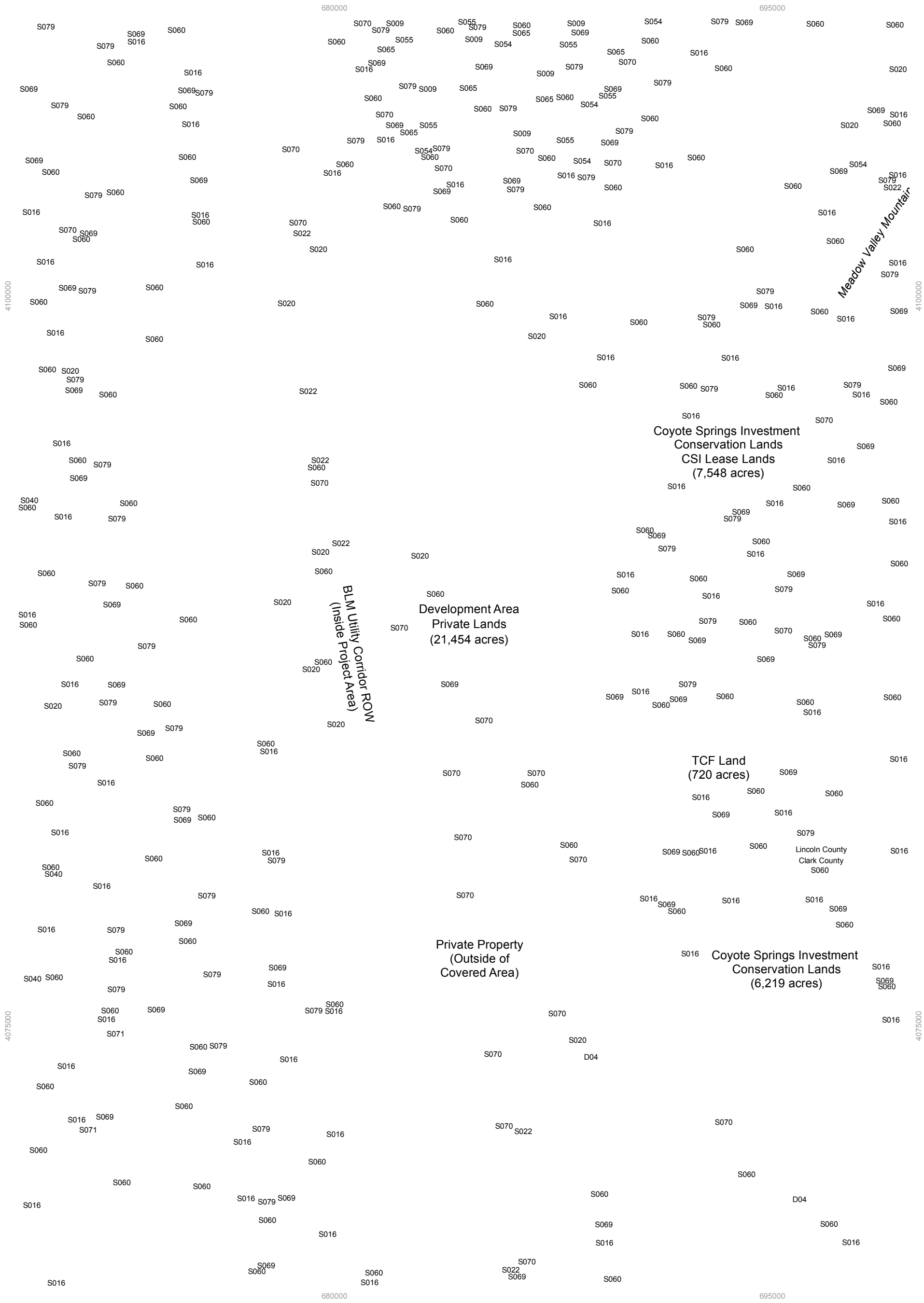


Figure 4-2
Vegetation Communities
within the Project Area

4.1.2.2 Wildlife

4.1.2.2.1 Terrestrial Wildlife Species

Wildlife species occurring within the project area include those typically found in and adapted to the arid Mojave Desert Ecosystem. The distribution and abundance of species is influenced by many factors, including plant species diversity, vegetation structure, substrate, predator/prey populations, and availability of cover sites and water. Environmental conditions within the desert are highly variable, and many species are able to quickly take advantage of favorable circumstances (e.g., rainfall) and/or to escape harsh situations through adaptations of physiology (e.g., use of metabolic water) and/or behavior (e.g., hibernation/aestivation, underground burrows and migration). Wildlife guzzlers, man-made structures designed to collect and store rainfall and run-off to provide water for quail, doves, rabbits and a variety of other small birds and mammals during the dry season, were constructed along Pahranagat Wash incised ephemeral channel by NDOW in 1982. Several guzzlers are located on CSI property in Lincoln County. Washes and stream courses often serve as corridors for animal movements, providing habitat connectivity across the greater landscape. Generally, wildlife also occurs in greater numbers and diversity with higher structural complexity of the vegetation and plant species diversity. Riparian communities, as found along portions of the Muddy River, have the highest species diversity of wildlife within the Mojave Desert Ecoregion. This habitat type is extremely limited in this ecoregion. Many riparian-dependant wildlife species have become imperiled due to loss and/or modification of riparian and aquatic habitats within the ecoregion.

Mammal species typically occurring in the Mojave Desert and present within the project area include coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), rock squirrel (*Spermophilus variegatus*), antelope ground squirrel (*Ammospermophilus leucurus*), desert wood rat (*Neotoma lepida*) and Merriam's kangaroo rat (*Dipodomys merriamii*). Big game species, such as desert bighorn sheep (*Ovis canadensis*) and mule deer (*Odocoileus hemionus*), may be found within CSI lands.

The BLM and NDOW manage big game species as sensitive species. Mule deer occur within the project area in generally low numbers. They are usually associated with washes and areas of relatively dense vegetation and/or topographic relief; however, use of these areas increases during the cooler months when water is not as limiting. The greatest concentration of bighorn sheep in Nevada occurs in Clark County and southern Lincoln County. Populations of bighorn sheep are found in all of the mountain ranges surrounding Coyote Spring Valley. Five intermountain movement corridors have been identified (The Nature Conservancy 2001). These include between the Arrow Canyon Range and the southern Meadow Valley Mountains across State Route 168 just south of the project area, and between the Las Vegas Range and the Arrow Canyon Range across U.S. Highway 93 southwest of the project area. Bighorn sheep are known to cross U.S. Highway 93 from mile marker 60 to the north of the project area in Lincoln County (pers. comm., P. Cummings). Bighorn sheep also cross State Route 168 (pers. comm., P. Cummings), which crosses through the project area.

Seven species of special status bats could potentially occur in the project area, including Townsend's big-eared bat (*Corynorhinus townsendii*), Allen's big-eared bat (*Idionycteris phyllotis*), small-footed myotis (*Myotis ciliolabrum*), fringed myotis (*Myotis thysanodes*), Yuma myotis (*Myotis yumanensis*), big free-tailed bat (*Nyctinomops macrotis*), and Brazilian free-tailed bat (*Tadarida brasiliensis*). In 2003, NDOW conducted acoustic bat surveys at four sites in Lincoln County (one site in the Meadow Valley Range, one site along Kane Springs Wash, and two sites along Meadow Valley Wash). Twelve bat species were detected during these surveys including six of the above-mentioned special status species (Allen's big-eared bat was not detected) (Hardenbrook 2008). Most of these species are wide-ranging and occur within many habitat types; however, the critical life history aspect, which determines presence for most bat species is the availability of appropriate roost sites. Many species of bats have specific roost requirements and often roost in small to large groups. The big free-tailed bat requires crevices on steep cliff faces but will occasionally use buildings or caves. Allen's big-eared bat and Townsend's big-eared bat roost in caves or mines (often with specific thermal regimes). Fringed myotis, small-footed myotis, and Yuma myotis require protected sites, but accept a variety of roosts such as trees, mines and caves, rock crevices, and certain bridges and buildings. However, Yuma myotis is usually associated with open water. Large colonies of Brazilian free-tailed bats may be associated with mines, caves, or bridges. Both the fringed myotis and small-footed myotis roost singly or in small groups

and will use rocky crevices even fairly close to the ground. There are potentially suitable roost sites for the fringed myotis and small-footed myotis in the project area, where there are exposed crevices. There are no known or suspected colonial bat roosts within the project area. There are no mines (Bill Durbin, Nevada Division of Minerals, pers. comm. 2006), suitable bridges (Todd Stefonowicz, NDOT, pers. comm. 2006), or abandoned buildings within the project area. Suitable sites may occur outside the project area and within flying distance of foraging areas within the project area. Foraging activities of most bats appear to be concentrated at sites with open water or are broadly dispersed across the landscape.

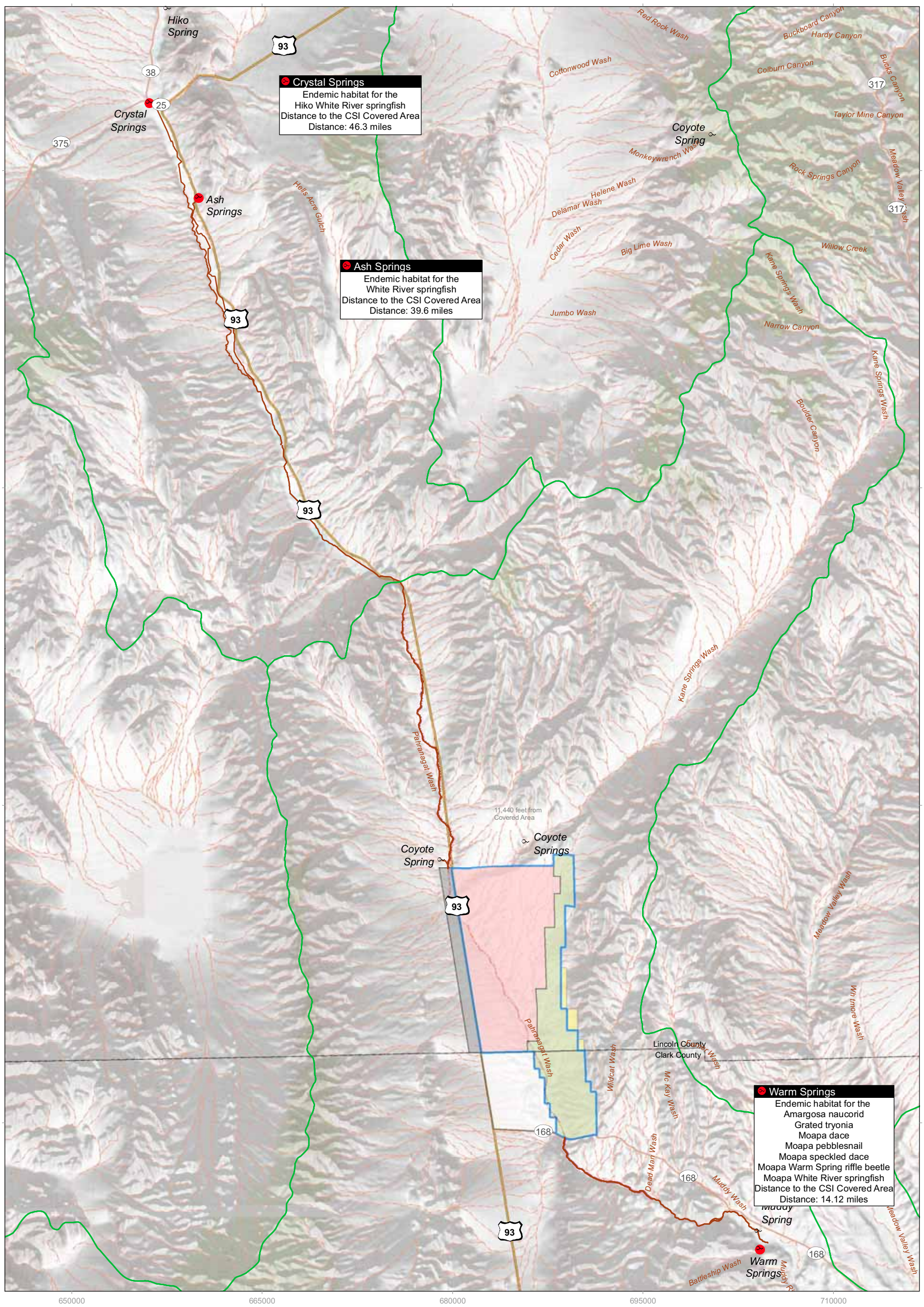
The Mojave Desert Scrub Ecosystem within the project area provides breeding and wintering habitat for many species of birds, most of which forage and nest on the ground or among low shrubs. Of particular importance for bird diversity within the area are the small patches of mesquite and desert willow that occur in scattered locations along the Pahranagat Wash incised ephemeral channel. These trees provide feeding, roosting, and nesting sites for a variety of species, as well as resting sites for migrating birds. Bird species' diversity within Mojave desert scrub habitats within the project area is not particularly high. Typical species present in the project area would include red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), mourning dove (*Zenaidura macroura*), Gambel's quail (*Callipepla gambelii*), cactus wren (*Campylorhynchus brunneicapillum*), Say's phoebe (*Sayornis sayi*), western kingbird (*Tyrannus verticalis*), house finch (*Carpodacus mexicanus*), and the nonnative house sparrow (*Passer domesticus*).

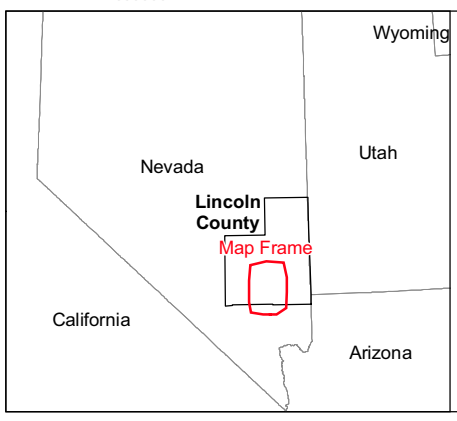
The herpetofauna within the project area is particularly diverse. Coyote Spring Valley includes snake and lizard species typical of Mojave desert scrub, as well as several species associated with the Sonoran Desert. The substrate and presence of cover sites often influence the site-specific occurrence of many reptile species. Reptile species present include desert tortoise (*Gopherus agassizii*), banded Gila monster (*Heloderma suspectum cincrum*), chuckwalla (*Sauromalus ater*), collared lizard (*Crotaphytus bicinctores*), western banded gecko (*Coleonyx variegatus*), zebra-tailed lizard (*Callisaurus draconoides*), western whiptail (*Aspedoscelis tigris*), desert iguana (*Dipsosaurus dorsalis*), large spotted leopard lizard (*Gambelia wislizenii wislizenii*), northern desert horned lizard (*Phrynosoma platyrhinos platyrhinos*), and side-blotched lizard (*Uta stansburiana*). Western patch-nosed snake (*Salvadora hexalepis*), coachwhip snake (*Masticophis flagellus*), Great Basin rattlesnake (*Crotalus oreganus lotus*) and sidewinder (*Crotalus cerastes*) have been found in the project area. Other snake species likely to be present include glossy snake (*Arizona elegans*), California (common) kingsnake (*Lampropeltis getula californiae*), spotted leaf-nose snake (*Phyllorhynchus decurtatus*), western long-nose snake (*Rhinocheilus lecontei lecontei*), and (Sonoran) lyre snake (*Trimorphodon biscutatus lambda*). Amphibians present in the area include the red-spotted toad (*Bufo punctatus*).

The distribution and abundance of these reptile species are strongly influenced by microhabitat features such as substrate and/or cover sites. The chuckwalla requires rocky shelter sites with boulders or ledges. Generally, the banded Gila monster, collared lizard, lyre snake and speckled rattlesnake (*Crotalus mitchelli*) are also found in rocky areas. The sidewinder and leaf-nosed snake occur in areas of loose soil. The Mojave rattlesnake (*Crotalus scutulatus*) is found on rocky slopes and open desert. The leopard lizard and desert iguana generally occur in more open areas. The long-nosed snake, California kingsnake, glossy snake, and western banded gecko occur in areas of somewhat denser vegetation. The red-spotted toad is found along rocky streams and riverbeds. This species also occupies drier habitats in the area, making use of moist crevices, temporary water pockets, and some bighorn sheep water developments.

4.1.2.2.2 Aquatic and Riparian Species

There are no wetlands or perennial flows within the Development Area, nor are there any special status aquatic species. The ephemeral nature of the washes precludes the establishment of fish species. Desert riparian and aquatic habitats are present downstream of the Development Area, where the perennial flows of the Muddy River begin at Muddy and Warm springs, located approximately 17 miles away from the Development Area and 14 miles away from the project area (Figure 4-3).





Land Status
- CSI Covered Area
- CSI Development Area
- Conservation Lands
- The Conservation Fund Parcels
- BLM Utility Corridor
- Private Property (Outside of Project Area)
- Distance From Covered Area to Endemic Acuatic Species Habitat

- Springs
- Subwatershed Boundaries
- Ephemeral Channel
- Desert Dry Wash
- dtl_cnty
- Highway
- Roads

3 1.5 0 3 6 Miles

CSI Planned Development Project Final EIS

Figure 4-3
Species Location Distances
to the Project Area

ENTRIX

Riparian species, including special status species, occur in the Muddy Springs Area, the Upper Moapa Valley along the Muddy River and some of its tributaries. Moapa dace (*Moapa coriacea*), Moapa White River springfish (*Crenichthys baileyi moapae*), Moapa speckled dace (*Rhinichthys osculus moapae*), Moapa pebblesnail (*Fluminicola avernalis*), Amargosa naucorid (*Pelocoris shoshone shoshone*), Moapa Warm Springs riffle beetle (*Stenelmis moapa*), and grated tryonia (*Tryonia clathrata*) all may occur in the Warm Springs Area of the Muddy River, which is approximately 17 miles downstream of the Development Area. The nearest spring to the project area is Coyote Spring, which is located approximately 0.61 mile to the north. Two other aquatic species, the Hiko White River springfish (*Crenichthys baileyi grandis*) and the White River springfish (*Crenichthys baileyi baileyi*), occur upstream of the project area. The nearest spring that the Hiko White River springfish may occupy is Crystal Springs, which is located about 46 miles north of the project area. The White River springfish may occupy Ash Springs, which is located approximately 39 miles north of the project area.

Ephemeral ponds within the project area were evaluated for the presence of and habitat suitability for the Arizona toad (*Bufo microscaphus)*. None of the seasonally ponded waters in the project area provided the water quality, water permanence, or water flow regimes, all of which are necessary habitat features for the Arizona toad.

Broad-leaf deciduous riparian woodlands, such as those along the Muddy River, are of special importance to bird species diversity, providing nesting habitat for species such as great horned owl (*Bubo virginianus*), yellow warbler (*Dendroica petechia*), common yellowthroat (*Geothlypis trichas*), phainopepla (*Phainopepla nitens*), black phoebe (*Sayornis nigricans*) and Bullock's oriole (*Icterus bullockii*). Riparian habitats are also important as migration corridors for neotropical migrant species. However, no such riparian habitats occur within the project area.

The blue grosbeak (*Passerina caerulea*), vermillion flycatcher (*Pyrocephalus rubinus*), and western red-tailed skink (*Eumeces gilberti rubricaudatus*) could occur in riparian forest and riparian scrub habitats. The bald eagle (*Haliaeetus leucocephalus*) may forage along the Muddy River, though it does not nest in the area. The black tern (*Chlidonias niger*) do not nest within the river corridor but may opportunistically forage in the area. Peregrine falcon (*Falco peregrinus*) do not nest within the river corridor, but two previously unknown territories have been discovered in close proximity to the project and the CSICL, one of which is only approximately 100 to 300 meters east of the CSICL boundary. Both territories were occupied and produced fledged young in 2007. They use the project and Muddy River areas for foraging. The phainopepla (*Phainopepla nitens*) and Gambel's quail (*Callipepla gambelii*) may reach high densities in riparian habitats. The common kingsnake and mule deer also regularly occur in riparian areas. The MacNeil sooty wing skipper (*Hesperopsis gracielae*) is known to occur along the Muddy River; the larval foodplant is quailbush (*Atriplex lentiformis*). Each of the seven special status bat species listed in the project area could be found foraging within the Muddy River corridor. The broad-leaf deciduous riparian trees that remain along the Muddy River may provide day roost habitat for the fringed myotis, long-eared myotis (*Myotis evotis*), small-footed myotis, long-legged myotis (*Myotis volans*), western red bat (*Lasiurus blossevillii*), and silver-haired bat (*Lasionycteris noctivagans*). In 1999, a new distribution record for the western yellow bat (*Lasiurus xanthinus*) was recorded in the Muddy Springs/Moapa area. This bat does not have special status designation, but this occurrence represents the first Nevada record for the species. Subsequent surveys have confirmed the western yellow bat's continuing presence, roosting among the fronds of the many palm trees in the area (Altenbach et al. 2002).

The distribution of riparian and aquatic habitats in southern Nevada is limited, and much of the habitats that remain are severely degraded due to water diversions and/or invasion by non-native plant and animal species. The riparian and aquatic habitats associated with the Muddy River and the numerous springs in Upper Moapa Valley have been heavily impacted, but still provide some of the highest quality riparian habitat in the region.

4.1.3 Rare, Threatened, and Endangered Species

During the development of the CSI MSHCP, species were evaluated for potential presence within the project area and the Muddy River located downstream of the project area by accessing the USFWS's Threatened and Endangered Species System (TESS) to determine species status under the federal ESA, which was cross-referenced with the Nevada Natural Heritage Program (NNHP) Rare Animal List (March 18, 2004) and Rare

Plant and Lichen List (April 1, 2005). Species that may occur in the vicinity of the project area or the Muddy River area and are listed under the ESA as endangered or threatened include:

- Moapa dace (*Moapa coriacea*) – endangered
- White River springfish (*Crenichthys baileyi baileyi*) – endangered
- Hiko White River springfish (*Crenichthys baileyi grandis*) – endangered
- Southwestern willow flycatcher (*Empidonax traillii extimus*) – endangered
- Yuma clapper rail (*Rallus longirostris yumanensis*) – endangered
- Desert tortoise (*Gopherus agassizii*) – threatened
- Virgin River Chub (*Gila seminuda*) – endangered, Virgin River population only

Federal candidate species with the potential to occur in the project area include:

- Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*)

Federal candidate species with the potential to occur in the Muddy River area include:

- Yellow-billed cuckoo (*Coccyzus americanus*)
- Relict leopard frog (*Rana onca*)

Federally threatened and endangered species with the potential to occur in the Development Area of the proposed project include desert tortoise. In initial development of the proposed project, the USFWS concluded that the species with the potential for direct effects were the desert tortoise and a Nevada state-listed species, banded Gila monster. Species with the potential for indirect effects outside of the project area were the Moapa dace, southwestern willow flycatcher, Yuma clapper rail, and relict leopard frog.

4.1.3.1 Process for Determining Covered Species

For the purposes of the CSI MSHCP, a prioritization process was developed to determine which species would be included in the incidental take permit application as Covered Species.

Definitions for these designations were adapted from the Clark County MSHCP and EIS (RECON 2000) and are defined as follows:

4.1.3.1.1 Covered Species (Incidental Take Requested)

Covered species are those species for which coverage under an incidental take permit is requested. As described in the USFWS Region 1 Guidelines for Determining Covered Species Lists (1995), HCP applicants should consider:

- All federally listed species likely to be incidentally taken during the life of the permit,
- State listed species that are likely to be incidentally taken during the life of the permit,
- Those species for which sufficient information is known and for which adequate existing management prescriptions exist or can be easily defined and implemented sufficient to support an application for an incidental take permit(s),
- Those species about which a great deal of information may not be available but which are definitively known to share habitat with other Covered Species. For those species, it is believed that the management prescriptions (existing or easily defined) for other Covered Species would benefit sufficiently to support application for an incidental take permit, and
- Those species whose federally listing appears imminent, unless conservation measures are instituted which would be likely to assure survival and recovery of such species in the wild.

4.1.3.1.2 Evaluation Species (Further Assessment Recommended)

Evaluation Species are those species for which additional information is required or for which sufficient management prescriptions are unlikely to be able to be defined and implemented sufficiently to support an application for an incidental take permit. The application to the USFWS would not initially request an incidental take permit for those species. However, as additional information is accumulated and as management prescriptions are developed, CSI may submit amendments to the CSI MSHCP together with requests that certain Evaluation Species be added to the list of Covered Species. Evaluation Species include:

- Federally listed species where there is a low likelihood to be incidentally taken during the life of the permit,
- State listed and/or designated as imperiled species where there is a likelihood to be incidentally taken during the life of the permit,
- Those species for which insufficient information is known and for which inadequate management prescriptions exist or can be easily defined and implemented sufficient to support an application for an incidental take permit(s), and
- Those species for which a great deal of information is not available but they are known to share habitat with Covered Species. These species may benefit from the management prescriptions (existing or easily defined) implemented for Covered Species.

4.1.3.1.3 Watch List Species (No Further Consideration)

Watch List Species are those for which adequate information is not available to assess population range, current status, or conservation potential or those considered not to be at risk during the planning horizon of the CSI MSHCP. Watch List Species include:

- Federally listed species where there is a no detectable likelihood to be incidentally taken during the life of the permit,
- State listed where there is a low likelihood to be incidentally taken during the life of the permit,
- Species designated as imperiled where there is a low to medium likelihood to be incidentally taken during the life of the permit, and
- All species that have not been designated by state or federal agencies.

The Covered, Evaluation, and Watch List Species are summarized in Table 4-2, along with potential occurrence in the project area. A description of each species and Table 4-2 are presented below.

Table 4-2 Species Covered in the CSI MSHCP and Status Summary

Common Name	Coverage in HCP	Federal Protection	BLM Status	State Protection	Global Rank	State Rank	Global/ State Imperiled[1]	Potential to Occur in Project Area
Fish Species								
White River springfish	Watch List	FE	yes	yes	G2T1	S1	yes/yes	No
Moapa White River springfish	Evaluation			yes	G2T2	S2	yes/yes	No
Hiko White River springfish	Watch List	FE	yes	yes	G2T1	S1	yes/yes	No
Moapa dace	Covered	FE	yes	yes	G1	S1	yes/yes	No
Virgin River chub (Muddy River Population)	Covered	None, but Virgin River population is FE	yes	yes	G1T1Q	S1	yes/yes	No
Moapa speckled dace	Evaluation		yes	yes	G5T1	S1	yes/yes	No

Table 4-2 Species Covered in the CSI MSHCP and Status Summary

Common Name	Coverage in HCP	Federal Protection	BLM Status	State Protection	Global Rank	State Rank	Global/ State Imperiled[1]	Potential to Occur in Project Area
Reptiles								
Desert tortoise	Covered	FT	yes	yes	G4	S2S3	no/yes	Yes
Western banded gecko	Watch List				G5	S4	no/no	Yes
Desert iguana	Watch List				G5	S3	no/no	Yes
Large spotted leopard lizard	Watch List				G5	S4	no/no	Yes
Banded Gila monster	Covered	XC2	yes	yes	G4T4	S2	no/yes	Yes
Northern desert horned lizard	Watch List				G5T5	S4	no/no	Yes
Glossy snake	Watch List				G5	S4	no/no	Yes
California (common) kingsnake	Watch List				G5T5	S4	no/no	Yes
Spotted leaf-nose snake	Watch List				G5	S4	no/no	Yes
Western long-nose snake	Watch List				G5	S5	no/no	Yes
(Sonoran) lyre snake	Watch List				G5T5	S4	no/no	Yes
Amphibians								
Relict leopard frog	Evaluation	FC		yes	G1	S1	yes/yes	No
Arizona toad	Watch List	XC2			G3G4	S2	no/yes	No
Mammals								
Kit fox	Watch List				G4	S3	no/no	Yes
Birds								
Western burrowing owl	Covered	XC2	yes	yes	G4T4	S3B	no/no	Yes
Western yellow-billed cuckoo	Watch List	FC	yes	yes	G5T3	S1B	no/yes	No
Southwestern willow flycatcher	Evaluation	FE	yes	yes	G5T1T2	S1B	yes/yes	No
Phainopepla	Watch List		yes	yes	G5	S2B	no/yes	Yes
Yuma clapper rail	Evaluation	FE		yes	G5T?	S1	no/yes	No
Invertebrates								
Moapa pebblesnail	Watch List	XC2			G1G2	S1S2	yes/yes	No
Amargosa naucorid	Watch List		yes		T1G1G3	S1	yes/yes	No
Moapa Warm Spring riffle beetle	Watch List	XC2	yes		G1	S1	yes/yes	No
Pahranagat naucorid bug	Watch List		yes		G5T2	S2	no/yes	No
Grated tryonia	Watch List	XC2			G2	S2	yes/yes	No
Plants								
Three-corner milkvetch	Evaluation	XC2	yes	CE	G4T2T3	S2S3	no/yes	Yes
Sheep Mountain milkvetch	Watch List	XC2	yes		G5T2	S2	no/yes	No
Nye milkvetch	Watch List				G3	S3	no/no	Yes
Sticky ringstem	Watch List				G4	S2	no/yes	Yes
White bearpoppy	Watch List	XC2	yes		G3	S3	no/no	Yes

Table 4-2 Species Covered in the CSI MSHCP and Status Summary

Common Name	Coverage in HCP	Federal Protection	BLM Status	State Protection	Global Rank	State Rank	Global/ State Imperiled[1]	Potential to Occur in Project Area
Meadow Valley sandwort	Watch List				G2	S2	yes/yes	Yes
Las Vegas buckwheat	Evaluation	FC	yes		T2T3?QG5	S1S2	no/yes	Yes
Sticky buckwheat	Evaluation	XC2	yes	CE	G2	S2	yes/yes	Yes
White-margined beardtongue	Watch List	XC2	yes		G2	S2	yes/yes	Yes
Yellow two-toned beardtongue	Watch List	XC2	yes		G3T2Q	S2	yes/yes	No

[1]Denotes a global rank of G1 or G2 and/or a state rank of S1 or S2. Covered Species

The species status under the federal ESA is based on five listing factors. Based upon the level of threat (five listing factors), the species status may warrant protection under the ESA. The ESA listing status was obtained from the NNHP Rare Animal List (March 18, 2004) and the Rare Plant and Lichen List (April 1, 2005). The ESA status was then cross-referenced with the USFWS Threatened and Endangered Species System (http://ecos.fws.gov). Codes that were used to delineate the level of protection are defined as:

FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate
XC2 = Former Category 2 Candidate Species, now Species of Concern.

Some species warrant additional protection by the State of Nevada. The Nevada status was obtained from the NNHP Rare Animal List (March 18, 2004) and the Rare Plant and Lichen List (April 1, 2005). The Nevada status was then cross-referenced with a NatureServe (2006) species comprehensive report (available from http://www.natureserve.org/explorer/). Nevada faunal species either warrant protection or not under Nevada Revised Statute (NRS) 501. Flora species are designated per: [NRS ch. 527]

CE = Critically Endangered
CY = Protected as cactus, yucca, or Christmas tree
P = Proposed for state listing.

4.1.3.2 Description of Species

4.1.3.2.1 Covered Species

DESERT TORTOISE

Desert tortoises are most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, they occur in succulent scrub, cheesebush scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub, and scrub-steppe vegetation types of the desert and semidesert grassland complex (USFWS 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and over wintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, desert tortoises occur most commonly on gently sloping terrain with soils ranging from sandy-gravel and with scattered shrubs and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, desert tortoises can be found in steeper, rockier areas.

The desert tortoise is a large, herbivorous reptile found in portions of California, Arizona, Nevada, Utah, and in Sonora and Sinaloa, Mexico. The Mojave population of desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Sonoran Desert of California. Desert tortoises reach eight to 15 inches in carapace length. Adults have a domed carapace and relatively flat, unhinged plastron. Shell color is brownish, with yellow to tan scute centers. The forelimbs are flattened and adapted for digging and burrowing. Optimal habitat has been characterized as creosote bush scrub (*Larrea tridentata*) where precipitation ranges from two to eight inches, where a diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach

1982, Turner and Brown 1982). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

Threats to the desert tortoise include factors such as loss of habitat from construction projects (e.g., roads, housing and energy developments) and conversion of native habitat to agriculture. Grazing and off-highway vehicle activities not only degrade tortoise habitat but also may collapse burrows, killing any tortoises present. Also threatening the desert tortoise's continuing existence are disease, illegal collection by humans for pets or consumption, predation on juvenile desert tortoises by common ravens (*Corvus corax*) and kit foxes (*Vulpes macrotis*), and collisions with vehicles on paved and unpaved roads.

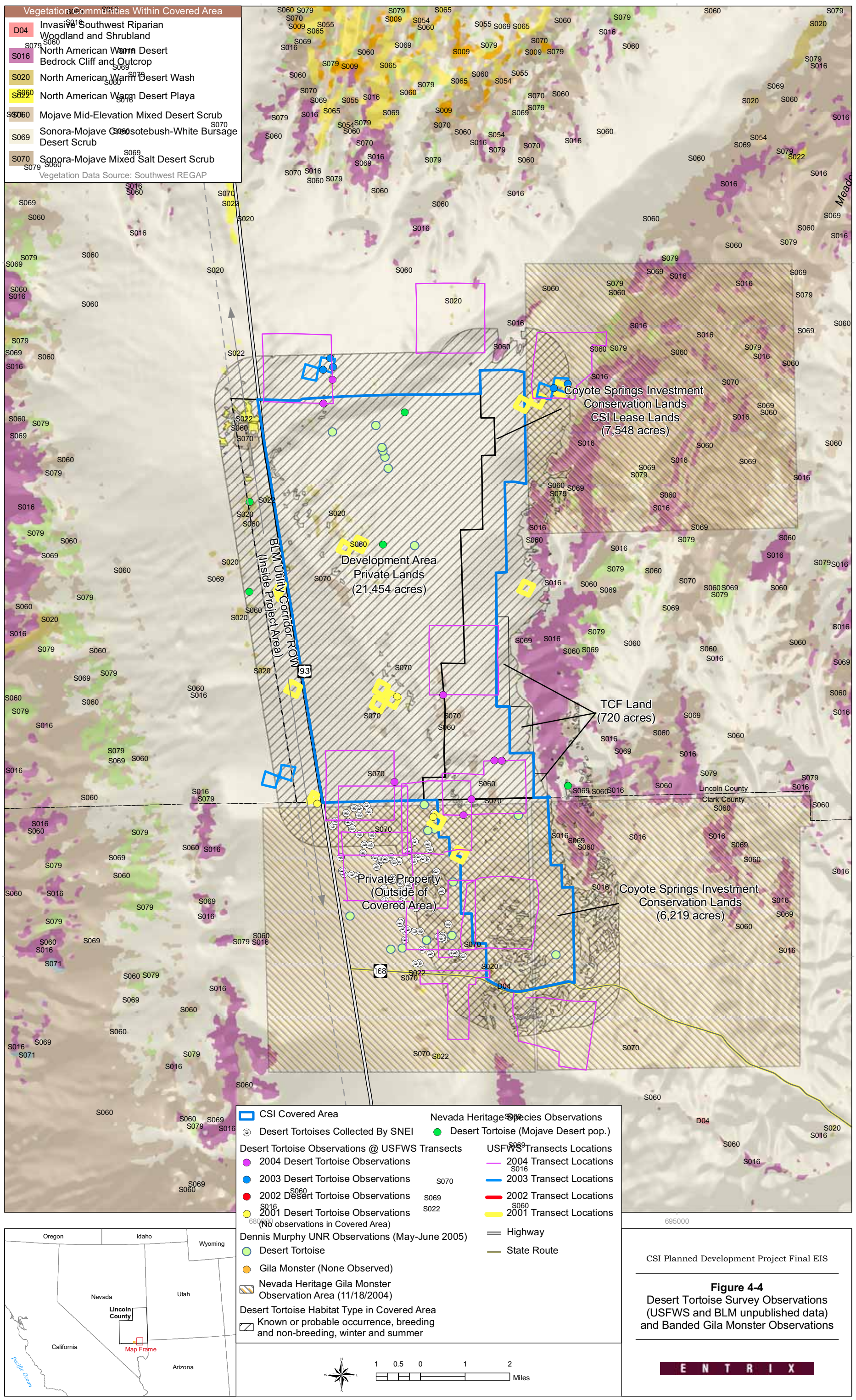
Historic estimates of desert tortoise density or abundance do not exist at the range-wide or regional level. However, Tracy et al. (2004) evaluated the data amassed between 1979 and 2002 from permanent study plots throughout the range of the species, including available density estimates, associated confidence limits, and survey methods. This evaluation revealed differences between survey methods and plot locations including non-random plot locations within larger regional areas. Given these caveats, Tracy et al. (2004) conducted trend analyses using permanent study plots as random samples across the region, and a weighted general linear model to derive more precise density estimates. Tracey et al. (2004) concluded that the apparent downward trend in desert tortoise populations in the western portion of the range that was identified at the time of listing is valid and ongoing.

A long-term monitoring program to obtain trend data for the desert tortoise which includes annual range-wide population monitoring using line-distance transects began in 2001 (1999 in the Upper Virgin River Recovery Unit; McLuckie et al. 2002). This is the first comprehensive effort undertaken to date to assess densities across the range of this species (USFWS 2006). Between 2001 and 2005, the monitoring goal was to collect baseline densities between recovery units. The baseline information would be used to refine monitoring design because it includes estimates for transect-to-transect variability in tortoise counts as well as regional variability in detention functions (USFWS 2006). Over the first five years of monitoring, tortoises were least abundant in the Northeast Mojave Recovery Unit (1 to three tortoise per kilometer^2 [2 to eight tortoises per mile^2]; USFWS 2006), and the highest reported densities occurred in the Upper Virgin River Recovery Unit (17 to 30 tortoise per kilometer^2 [44 to 78 tortoises per mile^2] (McLuckie et al. 2002, 2006).

CSI lands within the project area located within the Mormon Mesa CHU of the Northeastern Mojave Recovery Unit. Survey data from 2005 line-distance sampling in the Coyote Spring Valley, which includes transects in the CSI private and lease lands located in the Mormon Mesa CHU, estimated the tortoise densities in the valley to be 3.2 tortoise per kilometer^2 (8.3 tortoises per mile^2) (Figure 4-4). Tortoise densities in the Coyote Springs Valley are almost 50 percent more dense than the rest of the Northeastern Mojave Recover Unit (USFWS unpublished data). These results are preliminary as additional analysis that incorporates 2006 and 2007 survey data and a correction for survey effort is needed to finalize the results. Other recent surveys (2006-2007) were conducted in similar habitat immediately adjacent to the Development Area and include 100 percent clearance surveys on 5,302 acres or 21.07 kilometer^2 of CSI private lands in Clark County. Using total number of tortoises, 108 adults and juveniles, cleared during surveys, we estimate a density of 5.0 tortoises per one kilometer^2 (13 tortoises per mile^2) on the CSI private lands in Clark County.

Past surveys based on strip triangular methods have been conducted on CSI private and lease lands in Clark County. Data from strip triangular methods suggested higher tortoise densities, although the relationship between tortoise sign and census population sizes have not been validated. Therefore, there are limitations to the triangular strip method. However, density estimates from CSI transect surveys may still be useful for establishing presence and absence, as well as identifying distribution patters along the landscape. Refer to Volume 2: CSI MSHCP for more detailed information on past tortoise surveys within and adjacent to CSI lands.

Under the Preferred Alternative, CSI proposes to develop on up to 20,960 acres or 84.82 kilometer^2 of desert tortoise critical habitat. Based on the 2006-2007 clearance surveys density estimate, we estimate approximately 424 tortoises occurring within the 20,960 acres in Lincoln County. More detailed descriptions of Covered Species are included in Volume 2: CSI MSHCP.



CSI Planned Development Project Final EIS

Figure 4-4
Desert Tortoise Survey Observations (USFWS and BLM unpublished data) and Banded Gila Monster Observations

ENTRIX

BANDED GILA MONSTER

Banded Gila monster inhabits shrubby, grassy and succulent desert habitat types, occasionally entering into oak woodland (Stebbins 2003). It occurs in several desert plant associations, but seems most common in the paloverde dominated desert scrub. It may also occur in mesquite-grassland, creosote bush, and single-leaf pinyon and western juniper vegetation types (Jennings and Hayes 1994). It typically inhabits desert washes and is occasionally found on alluvial fans. The banded Gila monster tends to frequent the lower slopes of mountains and nearby plains. It is found in canyon bottoms or arroyos with perennial or intermittent streams. It seeks shelter in self-excavated burrows or alternatively, those made by small mammals, and occasionally in woodrat nests. It is also found in dense thickets, under rocks, and in other natural cavities. This species seems to prefer rocky areas and is often found at dawn or dusk following warm summer rains. Banded Gila monster is primarily ground dwelling and subterranean, spending greater than 95 percent of its life underground (NDOW 2005b), but will occasionally climb trees in search of forage.

Threats to banded Gila monster and its habitat include natural and exotic predators, habitat alteration, development, habitat fragmentation, illegal collection, and pets. Destruction of habitat due to the rapid urbanization within this species range is considered the main reason for the declining population. Although the collection of banded Gila monster is now illegal without proper permits, animals for sale in the pet trade carry a price tag of up to $2,000 each. Therefore, poaching for black market sales is also thought to be contributing to banded Gila monster declines (Jennings and Hayes 1994). Pet encounters with wildlife are also presumed to contribute to banded Gila monster declines (Jennings and Hayes 1994).

Potential habitat for the banded Gila monster has been identified within the northeast portion of the project area. Rocks and canyons provide protection from predators in Mojave/Sonoran Warm Desert Scrub, while rock outcrops provide protection from predators and foraging ground in Mojave Mid-Elevation Mixed Desert Scrub (NDOW 2005c). Because of the secretive habits of the Gila monster, adequate survey methods for this species have been difficult to develop. No surveys have been conducted in the Development Area.

WESTERN BURROWING OWL

Burrowing owls breed throughout Nevada in natural settings: salt desert scrub, Mojave shrub, and some sagebrush habitat, as well as in agricultural landscapes. Burrowing owls often breed around the fringes of agricultural lands and use crop and pasture lands for foraging during the breeding season. General habitat condition in many of the known nesting territories is poor. Excessive grazing by large ungulates does not seem to decrease nest site suitability, and may be preferred because of increased visibility. Burrowing owls also nest in open urban areas with open space (e.g., golf courses, airport runways, and industrial areas) if burrows are available. Concrete slabs and other debris left at the old Stead Air Force Base north of Reno, inhabited by California ground squirrels, provided high density nesting habitat for over 40 years (Neel 1999, as cited in Klute et al. 2003). Over-wintering is more common in the southern half of Nevada, but has been recorded throughout the State during all months (Herron et al. 1985, as cited in Klute et al. 2003).

Threats affecting burrowing owls include: habitat loss and fragmentation, reduction in burrow numbers, and predation by uncontrolled populations of small predators. Habitat loss due to agricultural cultivation and development is probably the main threat to burrowing owls in Nevada, although loss of native components and invasion of exotic species in shrub habitats may also have negative implications (Klute et al. 2003). Elimination of burrowing rodents through control programs has been identified as the primary factor in the recent and historical decline of burrowing owl populations (Butts and Lewis 1982, Pezzolesi 1994, Desmond and Savidge 1996, 1998, 1999; Toombs 1997, Dechant et al. 1999, Desmond et al. 2000, Murphy et al. 2001, all cited in Klute et al. 2003). Usually tolerant of humans and often found in urban or semi-urban areas, burrowing owls are susceptible to predation by dogs and cats (NatureServe 2006). Collisions with vehicles have been cited as a significant source of mortality by several researchers (Haug et al. 1993, as cited in Klute et al. 2003). Pesticides, particularly insecticides and rodenticides, in burrowing owl habitat have been reported as a potential factor in burrowing owl declines (James and Espie 1997, as cited in Klute et al. 2003).

Western burrowing owls potentially occur in the Development Area, as the presence of desert tortoise burrows in low elevation and slope is a good indicator of the present of burrowing owls on a site. Within the Mojave Desert, the desert tortoise is the primary species providing burrow sites to burrowing owls (USGS 2007).

Adjacent to the Development Area are the CSI private lands in Clark County, which contain similar habitat to the Development Area. Burrows for this the burrowing owl were found during 2006 tortoise clearance surveys on CSI private land in Clark County. Of the 48 burrows detected, three were active at the time. Given that western burrowing owls have high site fidelity, additional nests may be currently active (Goodwin, pers. comm., 2007). Prior to development of this EIS, there were no standardized survey protocol specific to burrowing owls in desert ecosystems. Recently, USGS (2007) developed a standardized survey protocol within the Mojave Desert. Burrowing owl surveys based on this protocol would be conducted within the Development Area prior to any ground disturbance to obtain baseline burrowing owl numbers and distribution within the project site.

MOAPA DACE

The Moapa dace is endemic to the headwaters of the Warm Springs Area in Clark County. The Moapa Valley National Wildlife Refuge (MVNWR), a 106-acre area of springs and wetlands located in the Warm Springs Area of the Upper Moapa Valley, was established in 1979 for the protection of Moapa dace. The Moapa dace currently occupies a variety of habitats in the Warm Springs Area, including spring pools, tributaries (spring outflows), and the upper 2.48 mile-long mainstem Muddy River (post-Hoover Dam). The MVNWR consists of three units encompassing the major spring groups: the Pedersen Unit, Plummer Unit, and Apcar Unit.

Moapa dace do not occur within the project area, as there are no perennial springs to support the species there. Moapa dace occur in the Warm Springs area of the Muddy River, which is approximately 14 miles away from the project area and 17 miles from the Development Area (see Figure 4-3).

Moapa dace surveys continue to be conducted annually on both public and private lands throughout the upper Muddy River system (USFWS 2006). The 2005 survey data indicate that there are approximately 1,300 fish in the population that occur throughout 5.6 miles of habitat in the upper Muddy River system (USFWS 2006). Approximately 95 percent of the total population occurs within one major tributary that includes 1.78 miles of spring complexes that emanate from the Pedersen, Plummer, and Apcar (aka Jones) spring complexes on the MVNWR and tributaries (upstream of the gabion barrio). Approximately 28 percent of the population was located on the MVNWR and 55 percent occupied the Refuge Stream supplied by the spring complexes emanating from the MVNWR. This Refuge Stream reach accounts for the highest density of Moapa dace, with the second and third highest densities occurring on the MVNWR's Plummer and Pedersen units, respectively.

The 2007 survey data indicate that there were approximately 1,172 fish in the population that occurred throughout 5.6 miles of habitat in the upper Muddy River system. Approximately 97 percent of the total population occurred within one major tributary that included 1.78 miles of spring complexes that emanate from the Pedersen, Plummer, and Apcar spring complexes on the Refuge and their tributaries (upstream of the gabion barrier). Approximately 48 percent of the population was located on the Refuge and 48 percent occupied the Refuge Stream supplied by the Pederson-Plummer springs. The highest densities of Moapa dace occurred on the Refuge's Plummer and Pedersen units (USFWS 2007 unpublished data).

In 2008, there was an approximately 60 percent decrease in the number of Moapa dace, from 1,172 fish in 2007 to 479 in 2008. Most of this decline is due to large changes in the numbers of dace in the Pederson, Plummer, and Refuge Stream areas, which supported more than 92 percent of the population in 2007. The cause of the population decline is currently unknown, although beavers have recently changed stream characteristics in the Refuge Stream. Habitat restoration projects have been implemented over the past few years in the Peterson and Plummer units of the Refuge, restoring the streams to a more natural state to augment Moapa dace habitat and populations (USFWS 2008 unpublished data).

Other threats to Moapa dace habitat include introductions of nonnative fishes and parasites, habitat loss through water diversions and impoundments, and reductions to surface spring-flows resulting from groundwater pumping; all of which impacts habitat for spawning, nursery, and food base.

Pumping from the carbonate aquifer has the potential to affect the portion of the White River Flow System that discharges into the Muddy River system. Groundwater pumping under existing water rights and possible future water rights may affect spring flows. The highest elevation springs, which are the most susceptible to impacts from groundwater pumping, occur on the Pedersen Unit of the MVNWR (USFWS 2006). The magnitude of

potential impacts is not known at this time. The carbonate aquifer system is the focus of ongoing studies and monitoring.

VIRGIN RIVER CHUB

Threats to Virgin River chub include natural and exotic predators, habitat alteration, toxic spills, and floods. Habitat alteration, through water impoundments, diversions, and floods are some of the main threats to the Virgin River chub (USFWS 2001). Predators of the Virgin River chub include piscivorous birds such as kingfishers and herons, soft-shelled turtles, and other vertebrate species. This is especially true during periods of low flow and clear water. Disease and toxic spills are also a threat to the Virgin River chub (USFWS 2001).

The Muddy River population of the Virgin River chub occurs in the Muddy River, approximately 14 miles from the project area and 17 miles from the Development Area (see Figure 4-3). Virgin River chub have been collected throughout the Muddy River, but were historically most abundant between the Warm Springs area and Logandale (Deacon and Bradley 1972, Cross 1976, as cited in USFWS 1996). As of 1996, the population in the mainstem Muddy River between the confluence with the Refuge Stream and Interstate 15 was estimated at 20,593 (confidence interval ±7,339; adjusted Petersen method) (Scoppettone unpubl. data, as cited in USFWS 1996). Virgin River chub are rarely captured downstream of Interstate 15 (Scoppettone unpubl. data; Heinrich, NDOW, unpubl. data; Deacon and Bradley 1972; Cross 1976, all cited in USFWS 1996). Low numbers are typically found within one to 1.5 miles downstream of the Wells Siding Diversion (Golden and Holden 2005). More detailed descriptions of Covered Species are included in Volume 2: CSI MSHCP.

4.1.3.2.2 Evaluation Species

MOAPA WHITE RIVER SPRINGFISH

Moapa White River springfish occur in five spring systems (Apcar, Baldwin, Cardy Lamb, Muddy Spring, Refuge) and the upper Muddy River, but are most abundant in the spring systems (Deacon and Bradley 1972, Cross 1976, Scoppettone et al. 1987, all cited in USFWS 1996).

The Moapa White River springfish does not occur in the project area, as there are no perennial springs to support the species there. Moapa White River springfish occur in the upper Muddy River system. As Moapa White River springfish may occupy similar springs with Moapa dace, the approximate distance to the Warm Springs area of the Muddy River is approximately 14 miles from the project area and 17 miles from the Development Area (see Figure 4-3).

In 2002, the population of Moapa White River springfish in warm springs outflows was estimated at 3,596 and 4,681 range-wide (NDOW 2002, 2003b). Numbers of native springfish were negatively correlated with blue tilapia abundance (NDOW 2002). Along the middle Muddy River, a small population at an off-channel location near Hidden Valley Dairy was sampled in 2002, catching 58 individuals in 17 minnow traps left overnight. Fifty-two of those individuals were captured near a small warm water seep on one side of the pond (NDOW 2002). In February 2003, NDOW visually counted Moapa White River springfish during Moapa dace surveys and estimated the population to be 11,823. Where a May 2003 fire altered 90 percent of the North Fork and South Fork drainages, initial counts of springfish were in the single digits (NDOW 2003b).

Threats to Moapa White River springfish are water loss, habitat modifications, and competition and predation by nonnative fishes. Much of the subspecies' habitat has been lost to groundwater pumping and alteration through illegal diversions in the Muddy River system (NDOW 2005c). Changes in water quality have resulted from grazing and agriculture (pesticides, herbicides, and fertilizer) (RECON 2000). Additionally, habitat degradation and population decreases have resulted from introductions, competition, encroachment of nonnative species (i.e., tamarisk, Vallsineria, fan palm invasion, red shiners, tilapia) (RECON 2000). Competition for food and predation by nonnative fishes continues to threaten the subspecies (NDOW 2005c). Approximately 95 percent of existing Moapa White River springfish habitat is in private ownership, while only five percent is in public ownership within the MVNWR (RECON 2000). Therefore, coordination between federal, state, and private interests is necessary for protection of the Moapa White River springfish.

MOAPA SPECKLED DACE

The Moapa speckled dace does not occur in the project area, as there are no perennial springs to support the species there. Moapa speckled dace may occur in the Warm Springs area of the Muddy River, which is approximately 14 miles from the project area and 17 miles from the Development Area (see Figure 4-3).

Moapa speckled dace currently inhabit approximately 16.7 km (10.4 mi) of the Muddy River. In a 1994 survey, a total of 706 Moapa speckled dace were captured and released in the mainstem Muddy River (Scoppettone unpubl. data, as cited in USFWS 1996). Twenty-eight percent were captured between Warm Springs Road bridge and White Narrows, 64 percent between White Narrows and Reid-Gardner Station, and eight percent between Reid-Gardner Station and Interstate 15 (Scoppettone unpubl. data as cited in USFWS 1996). One speckled dace was captured below the Interstate 15 bridge. Initial data collected by NDOW in 1995 measured Moapa speckled dace as occurring from 900 to 1,600 individuals per river mile (DFC 1997). Survey transects were conducted by NDOW at four points along the Muddy River in 1999, 2000, and 2001. In 2001, although only a portion of total habitat was sampled, 86 individual speckled dace were captured with hoop nets (NDOW 2002). Deacon and Bradley (1972) noted that the distribution of Moapa speckled dace shifted upstream between 1964 and 1967, as did the Virgin River chub (USFWS 1996).

Speckled dace have likely been adversely affected by reductions in water quality and quantity, habitat modifications, parasites, and competition and/or predation by nonnative fish species (USFWS 1996). The Moapa speckled dace is vulnerable to habitat alteration. Reductions in water quality and quantity may particularly affect Moapa speckled dace in the Muddy River.

RELICT LEOPARD FROG

The relict leopard frog was historically found in the Muddy and Virgin River drainages. The current distribution is reduced to six populations in two areas of the Lake Mead National Recreation Area: Overton Arm area of Lake Mead and Black Canyon below Lake Mead. Both areas represent historical localities, with specimen records dating from 1936 at the Overton Arm area and from 1955 at Black Canyon (USFWS 2004). These two areas comprise only a fraction of the historical distribution of the species, encompassing maximum linear extents of only 3.6 and 5.1 kilometers (2.2 and 3.2 miles), respectively (USFWS 2004). USFWS (2004) believes that within the Overton Arm area, dispersal of relict leopard frogs may be possible between Blue Point and Rogers springs, which are separated by a minimum of 1.6 kilometers (1 miles). Two relict leopard frogs have been observed by NPS staff at a small spring located between Rogers and Blue Point Springs (R. Haley, pers. comm. 2004, as cited in USFWS 2004).

The relict leopard frog is unlikely to occur within the project area, as there are no springs or other perennial waters within the project area. The relict leopard frog was historically found in the Muddy and Virgin River drainages.

To obtain a rough estimate of the total number of relict leopard frog adults, mark-recapture estimates of population size, visual encounter survey (VES) counts, and estimates for extent of available habitat are combined (Bradford et al. 2004, as cited in Relict Leopard Frog Conservation Team 2005). At the Northshore sites of Lake Mead, the estimated total linear extent of aquatic habitat is 5.1 kilometers, based on ground measurements, aerial photographs, and USGS digital orthophoto quadrangles. Assuming a frog density similar to that observed in the upper segment of Blue Point Spring in 1995 to 1996 (i.e., mean of 35.9 adults/555 meters), the estimated total number of frogs in the Northshore Arm area is 330 adults. This is likely an overestimate, because the density of frogs encountered in most of the aquatic habitat in this area is conspicuously lower than the density seen at the upper Blue Point Spring area. In Black Canyon, the population estimate at Bighorn Sheep Spring was 637 adults at a time when 104 frogs were counted in the VES, a factor of 6.1. Applying this factor to the average VES counts at the other two sites in Black Canyon (mean counts of five and 13), an estimate of 750 frogs is obtained for the total adult population size in Black Canyon, 85 percent of which are at Bighorn Sheep Spring. This yields approximately 1,100 adult frogs as the rough estimate for the total population of adult relict leopard frogs, more than half of which occur at one site. These estimates should be interpreted with caution as numbers of relict leopard frogs in a population are expected to vary considerably within and among years (Sredl et al. 1997, Skelly et al. 1999, Sartorius and Rosen 2000, as cited in Relict Leopard Frog Conservation Team 2005).

Threats to the relict leopard frog include alterations to habitat, disease, predation, illegal collection, grazing, habitat fragmentation, and low genetic diversity. Water development within the historic range of the relict leopard frog, including the impoundment of water, loss of the natural flow regime, the damming of the Colorado River and subsequent inundation of suitable habitat are all likely factors that caused population declines and continue to endanger remaining populations (CBD 2002).

SOUTHWESTERN WILLOW FLYCATCHER

Southwestern willow flycatchers primarily use Geyer willow (*Salix geyerana*), Goodding's willow (*Salix gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*), and live oak (*Quercus agrifolia*) for nesting (USFWS 2002). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge et al.1997). Saltcedar, an exotic species, is an important component of the flycatcher's nesting and foraging habitat.

Declines in southwestern willow flycatcher populations have been attributed to loss, modification, and fragmentation of habitat and brood parasitism by brown-headed cowbirds (Finch and Stolenson 2000, Whitfield 1990, Sferra et al. 1995). Habitat loss has occurred through water management, land use practices, fire, and introduction of exotic species. The desiccation of riparian areas through water management and encroachment of human development has greatly increased risk of fire(s). Exotic species are also replacing native riparian vegetation along waterways. These species often form monospecific stands that differ from native multistory and multispecies composition. Willows and cottonwoods, vegetation commonly used by willow flycatchers, are often outcompeted by aggressive exotic species (Finch and Stolenson 2000). Additionally, willow flycatcher nests are being parasitized by brown-headed cowbirds, which lay their eggs in the host's nest. Numerous human-related activities influence the distribution and abundance of cowbirds in riparian habitats including grazing, recreation, and urban development (Finch and Stolenson 2000).

None of the land in the project area is designated as Critical Habitat (USFWS 2005c). The closest designated critical habitat is a 73.8 mile (118.7 km) section of the Virgin River southeast of and separated from the project area (70 FR 60886). Closer to the project area, Pahranagat National Wildlife Refuge and the Key Pittman and Overton Wildlife Management Areas have suitable habitat for willow flycatcher and have had documented breeding. Critical habitat was not designated at these facilities because of their exclusion under Section 4(b)(3) of the ESA, i.e. the lands are currently protected and have developed management programs that are being implemented for the protection of southwestern willow flycatcher habitat. No flycatcher surveys have been done within the project area at this time. However, surveys have been done for the surrounding area; the most relevant area to the project area being the Muddy River. Presence/absence surveys completed along the Muddy River, southeast of the project area, detected four willow flycatchers (McLeod, et al. 2005). NDOW also detected this flycatcher along the Muddy River at the Warm Springs Ranch in 2003, 2004 and 2005 (NDOW 2004-2006). Koronkiewicz et al. (2003) surveyed for willow flycatcher breeding areas around the Virgin and Lower Colorado River regions. The surveys took place near the City of Mesquite, southeast of the project area. In 2003, 30 resident willow flycatchers were recorded from 19 different breeding territories, and eight other individuals were also observed for which no residency could be established. In 2004, six flycatcher territories and nine resident birds were detected. All nest sites were located downstream of the Mesquite Bridge, south of the project area.

YUMA CLAPPER RAIL

The Yuma clapper rail occurs in freshwater or brackish marshland habitats, most often with tall, dense emergent vegetation composed primarily of cattail (*Typha* spp.) and bulrush (*Scirpus* ssp.). The interface between marsh and dense riparian vegetation has been considered important, and some birds have been located in flooded saltcedar (*Tamarix* spp.) and willow (*Salix* spp.) stands adjacent to the marshes (Todd 1986, Eddleman 1989). The main factors determining habitat use, according to Eddleman (1989), are the annual range of water depth and the existence of residual mats of marsh vegetation. Stable or slowly changing water levels are preferred over conditions with large and rapid water level fluctuations. Openings within the wetland, especially open channels with flowing water are also important (Todd 1971, Tomlinson and Todd 1973). Yuma clapper rails will use quiet backwater ponds, flowing streams or riverside areas, irrigation canals and

drainage ditches, reservoirs, and small lakes where cattail habitat is available. Natural and artificially constructed marshes can provide suitable habitat. The most productive clapper rail areas consist of a mosaic of uneven-aged marsh vegetation interspersed with open water of variable depths and adjacent to dense riparian vegetation (Conway et al. 1993).

Threats to the Yuma clapper rail include alterations to habitat and environmental contaminants. Water management projects within the lower Colorado River Basin have both destroyed and created Yuma clapper rail habitat. Damming of the Colorado River altered natural flows regimes, inundated habitats, and created backwaters that developed extensive marshlands. Channel dredging, bank stabilization, water diversions, other channel maintenance activities, and development in the flood plain can potentially destroy large areas of marsh habitat and disturb birds, especially during nesting. Management of the Colorado River has contributed to the expansion of marshes as well as their increased longevity. However, controlling the natural flow regime of the river has eliminated the variable physical conditions that provide for marsh regeneration. Recent environmental contaminant studies on the Colorado River (Roberts 1996, King et al. 2000) have indicated high levels of selenium (a trace metalloid) in tissues of the Yuma clapper rails and their eggs, and in crayfish, the rail's primary prey. Similar concentration of selenium found in other species have resulted in metabolic problems and reduced reproductive success. No adverse impacts from selenium have been observed in the Yuma clapper rail; however, due to the rail's secretive nature, nests are difficult to find, young birds are hard to observe, and reproductive success is difficult to monitor. No recovery units or critical habitat has been designated for the Yuma clapper rail.

Yuma clapper rail is unlikely to occur within the project area, as there are no perennial-fed marshes within the project area. However, Yuma clapper rail habitat might be indirectly affected in the Muddy River, which is located 14 miles downstream from the project area. The San Bernardino County Museum has conducted avian surveys throughout Southern Nevada since 2000, which have focused on areas along the Virgin and Muddy Rivers (Braden et al. 2005). Initial surveys reported the presence of Yuma clapper rail in both river valleys, although the most recent survey (2004) failed to identify any individuals along the Muddy River. Habitat loss due to tamarisk removal, low river flows, and entrenchment of the Muddy River is thought to have been responsible for their absence (Braden et al. 2005). Southern Nevada is known as the Yuma clapper rail's northern distribution limit. Populations at the limits of a species' distribution are usually more sensitive to environmental and or ecological change. Lower-than-average precipitation throughout the area over the last nine years (Braden et al. 2005) and habitat loss are likely factors in the reduced abundance of Yuma clapper rail throughout the region. Furthermore, extensive flooding to the Muddy River during January 2005 led to further habitat destruction and fragmentation throughout much of the area, resulting in an even greater reduction in suitable clapper rail habitat (BIO-WEST 2005).

LAS VEGAS BUCKWHEAT

Las Vegas buckwheat is found at elevations ranging from 579 to 1,170 meters (1,900 to 3,839 feet). It occurs on and near gypsum soils, often forming low mounds or outcrops in washes and drainages, or in areas of generally low relief. It is associated with other gypsum-tolerant species such as Las Vegas bearpoppy (*Arctomecon californica*). This species is generally surrounded by white bursage (*Ambrosia dumosa*), desert prince's-plume (*Stanleya pinnata*), four-wing saltbush (*Atriplex canescens*), Torrey's mormon-tea (*Ephedra torreyana*), creosote bush (*Larrea tridentata*), catclaw acacia (*Acacia greggii*), shrubby seepweed (*Suaeda torreyana*), and Fremont's smokebush (*Psorothamnus fremontii*) (Morefield 2001). This species is found in sandy to gravelly soil in flats or washes in saltbush vegetation communities (Flora 1993).

Las Vegas buckwheat is threatened by habitat conversion for residential and urban development, off-road vehicle use, dumping, flood control, road and utility corridors, and gypsum mining (Morefield 2001).

Two occurrences (mapped at >1 kilometer separation) of Las Vegas buckwheat were found within the badlands west of the Pahranagat Wash in Clark County. The largest occurrence of Las Vegas Buckwheat (site LVB 1) contains approximately 2,380 individuals within an 18.2-acre area. It is located on a large, flat terrace within the badlands on what appeared to be gypsum soils, although soil composition was not tested. The second occurrence is located on one of two adjacent, flat outcrop areas along the western edge of the badlands (LVB 2 and LVB 3). The combined total of individuals for LVB 2 and LVB 3 is approximately 1,450 located within an area of 7.2 acres (ENTRIX et al. 2005).

Surveys for Las Vegas buckwheat were conducted on April 7 to 8, April 26 to 28, and May 23 to 26, 2005, within the project area. All areas of potential range were walked using a meandering survey approach. No occurrences of Las Vegas buckwheat were observed within the project area.

THREE-CORNER MILKVETCH

In Nevada, the three-corner milkvetch is dependent on sand dunes or deep sand and occurs between 1,100 and 2,400 feet (335 to 732 m) in elevation (NNHP 2001a). Three-corner milkvetch is also found in eroded clay soils in alcoves along the edges of mesas (Niles et al. 1995). A population census conducted in Nevada suggests that there are 39 extant occurrences of this species with a 1-km separation. When mapped using a 0.16-km separation, there are 45 extant occurrences and one extirpated occurrence. Total estimated individuals are in excess of 4,094 plants (NNHP 2001a).

One of the greatest threats to the three-corner milkvetch is the difficulty in managing potential habitat due to the lack of knowledge regarding its general ecology and population trends. Additional threats are those sustained from human recreational activities. Individual off-road vehicles and off-road vehicle events cause habitat degradation, as well as direct mortality to the three-corner milkvetch. Participant vehicles, spectators, and spectator vehicles all pose possible impacts. Additional recreational activities which may result in possible impacts are: equestrian trail rides, dog field trials, flying machine events (remote and piloted), skydiving, and associated parking for these events (RECON 2000). Grazing of both domestic livestock and feral animals, such as burros, may result in significant habitat destruction as well as trampling. Sand and gravel mining operations in the area directly and indirectly cause mortality. Water projects (i.e., diversions and ground water pumping) can lower the water table to the point that water is not available to support the biological processes of the three-corner milkvetch.

Surveys for three-corner milkvetch were conducted on April 7 to 8, April 26 to 28, and May 23 to 26, 2005, within the project area. All areas of potential range were walked using a meandering survey approach. No occurrences of three-corner milkvetch were observed within the project area.

STICKY BUCKWHEAT

In Nevada, sticky buckwheat is found in deep loose sandy soils in washes, flats, roadsides, steep aeolian slopes, and stabilized dune areas. This species can withstand moderate temporary disturbance. Sticky buckwheat occurs between 1,200 and 2,200 feet (366 to 671 meters) in elevation within the Mojave Desert scrub community (NNHP 2001b).

Perhaps the greatest threat to sticky buckwheat is the difficulty in managing potential habitat due to the lack of information regarding its ecology and to unknown population trends. More tangible threats include those sustained from concentrated human recreation. Individual off-road vehicles and off-road vehicle events cause habitat degradation, as well as direct mortality of this species. Participant vehicles, spectators, and spectator vehicles all pose possible threats. Additional recreational activities that may result in possible impacts are equestrian trail rides, dog field trials, flying machine events (remote and piloted), skydiving, and associated parking for these events (RECON 2000). Grazing of both domestic livestock and feral animals may result in significant habitat destruction as well as trampling. Mining operations in the area directly and indirectly cause mortality. Changes in habitat can be caused by water projects (i.e. diversions and ground water pumping) and the subsequent lowering of the water table to a point at which water is no longer biologically available. Exotic species can cause habitat degradation, competition, and competitive exclusion (RECON 2000).

Surveys for sticky buckwheat were conducted on April 7 to 8, April 26 to 28, and May 23 to 26, 2005, within the project area. All areas of potential range were walked using a meandering survey approach. No occurrences of sticky buckwheat were observed within the project area.

More detailed descriptions of Evaluation Species are included in Volume 2: CSI MSHCP.

4.1.3.2.3 Watch List Species

Watch List Species that are either federally or state-protected are briefly discussed below.

WHITE RIVER SPRINGFISH (*C. BAILEYI BAILEYI*)

White River springfish are endemic to the remnant waters of the White River system in eastern Nevada. The entire population is confined to the spring pool at Ash Springs, Lincoln County, Nevada with infrequent occurrences reported in the outflow stream (Tuttle et al. 1990). Ash Springs has a surface area less than two acres, and is used by the public as a swimming facility and is principally occupied by exotic fishes. Historically, White River springfish inhabited Ash Springs and its outflow stream and were considered common in these areas. Threats include habitat alteration due to cattle and the introduction of non-native species (NatureServe 2006). This species does not occur in the project area of the proposed CSI project in Lincoln County.

HIKO WHITE RIVER SPRINGFISH (*C. BAILEY GRANDIS*)

Hiko White River springfish are endemic to the remnant waters of the White River system in eastern Nevada. Hiko White River springfish are present in Hiko Spring and in Crystal Spring and its outflow. The fish has also been introduced into Blue Link Spring in Mineral County, Nevada. The original Hiko Spring population was extirpated from Hiko Spring and its outflow stream by 1967. The population that now exists at Hiko Spring descends from individuals taken from Crystal Spring. As of 1995, the populations at Hiko and Blue Link Springs were stable, having approximately 5,500 and 12,000 fish, respectively. However, with fewer than 125 individuals, the Crystal Spring population is in danger of extirpation (USFWS 1998a). Critical habitat for the Hiko White River springfish includes Crystal Springs and Hiko Springs, their associated outflows, and surrounding land areas 15 meters from the bank in Pahranagat Valley, Lincoln County, Nevada (USFWS 1998a, FR 1985). No critical habitat has been designated for the introduced population at Blue Link Spring. Threats include habitat disturbance from cattle and introduction of non-native fishes, such as largemouth bass (NatureServe 2006). This species does not occur in the project area of the proposed CSI project in Lincoln County.

YELLOW-BILLED CUCKOO

Yellow-billed cuckoos breed in isolated patches of riparian habitat in California, southern Nevada, Utah, southern Wyoming, and Northern Mexico. The yellow-billed cuckoo breeds in riparian woodlands dominated by cottonwoods (*Populus fremontii*) and willows (*Salix* spp). Patches must be at least 16.8 hectares with a minimum of 3.0 hectares of closed canopy broad leaf forest (Laymon and Halterman 1987) to provide adequate habitat for yellow-billed cuckoos. Optimal patch size is greater than 80 hectares and wider than 580 meters (Laymon and Halterman 1987). Because nests are generally constructed in willows while foraging occurs in the cottonwood canopy, multistory structure is required (Laymon and Halterman, 1987). Yellow-billed cuckoos are generally absent from saltcedar (*Tamarisk* spp.) dominated areas (Hunter 1984). Declines in yellow-billed cuckoo populations are attributed to habitat loss and fragmentation, pesticide use, and shooting (Laymon 1998, Fleury 1994, Wiggins 2005). This species does not occur in the project area of the proposed CSI project in Lincoln County.

PHAINOPEPLA

The phainopepla has rarely been encountered in adjacent CSI lands in Clark County (ENTRIX et al. 2005). The same would be expected in the project area. Generally, the bird is associated with mistletoe, a parasitic plant that infects various species of trees including mesquite, acacia, and cottonwood. The phainopepla feeds on the mistletoe berries. Threats include habitat loss (NDOW 2005c). No trees occur within the Development Area.

4.2 WATERS OF THE UNITED STATES

A site reconnaissance was implemented in 2006 to delineate WOUS subject to Corps jurisdiction, following current Corps guidelines under Section 404 of the CWA. The survey area consisted of all of the project area (21,454 acres of CSI land and 13,767 acres of CSI lease land in Lincoln and Clark counties), as well as the BLM utility corridor located west of U.S. Highway 93 (3,331 acres).

On the basis of the methods and criteria for delineating wetlands and other WOUS, as defined in the Corps' (1987) Manual, and Corps guidance documents and regulations (Corps 2001, 1992), no wetlands subject to the Corps jurisdiction were found; as taken collectively, there were no present indicators of hydric soil, a prevalence of wetland vegetation, and wetland hydrology. However, potential other WOUS were found within the survey area. The Huffman-Broadway Group, Inc. and Resource Concepts, Inc. [RCI] (2006) estimate that approximately 63.4 acres of potential WOUS (tributaries of intrastate streams as defined in 33 CFR 328.3.a.5) in the Development Area and BLM utility corridor are subject to Corps jurisdiction under Section 404 of the CWA (Table 4-3).

Table 4-3 Aquatic Habitats Found Within the CSI Lands (Private and Leased) and BLM Utility Corridor Regulated Under Section 404 of the Clean Water Act (The Huffman-Broadway Group, Inc. and RCI 2006)

Land Form	National Wetlands Inventory Habitat Type	Hydrology Regime	Regulatory Data Regarding Potential Jurisdictional Status	Areas Delineated Technically Meeting EPA/Corps Wetlands Criteria (ac)	Areas Delineated Technically Meeting EPA/Corps WOUS Criteria (ac)
Ephemeral Drainages	Riverine	Intermittently Flooded[1]	Bed and bank and OHWM present	0	63.4

[1]Intermittently Flooded– U.S. Fish and Wildlife Service , National Wetlands Inventory Definition: "The substrate is usually exposed, but surface water is present for variable periods without detectable seasonable periodicity. Weeks, months, even years may intervene between periods of inundation. The dominant communities under this regime may change as soil conditions change. Some areas exhibiting this regime do not fall within our definition of wetlands because they do not have hydric soils or support hydrophytes (Cowardin et al.)."

Figure 4-5 shows these delineated, potential WOUS. Appendix H contains the complete jurisdictional report on unverified wetlands and WOUS (Huffman-Broadway Group, Inc. and RCI 2006).

WOUS were delineated by the presence of a definable bed and bank and the use of field indicators to define the presence of an ordinary high water mark representative of normal inundation (hydrology). Field data collected were compared to predicted channel flows using the Rational Method or USGS method to compare channel widths for a two-year event. This comparison provided a means to determine that the indicators being observed were representative of normal, above normal to extreme flow events. The low-flow channel widths were selected as the most representative of flow during normal rainfall conditions, which are believed to occur, on average, every year or every two years. Daily rainfall within this frequency range is typically below one inch. It is believed, based on field indicators and rainfall data, that flows from less frequent rainfall events of a greater magnitude than one inch of daily rainfall are not representative of normal hydrology conditions (Huffman-Broadway Group, Inc., and RCI 2006).

4.2.1 Wetlands and Other Waters Areas Exempt from Corps Jurisdiction

A number of discretionary exemptions from CWA regulations exist for areas that would otherwise qualify as WOUS.[7] Furthermore, Solid Waste Agency of Northern Cook County vs. U.S. Army Corps of Engineers, Case No. 99-1178 (January 9, 2001) (SWANCC) involved statutory and constitutional challenges to the assertion of CWA jurisdiction over isolated, non-navigable, intrastate waters used as habitat by migratory birds. SWANCC held that there is no CWA jurisdiction over "isolated, non-navigable, intrastate waters" where there is no interstate or foreign commerce nexus.

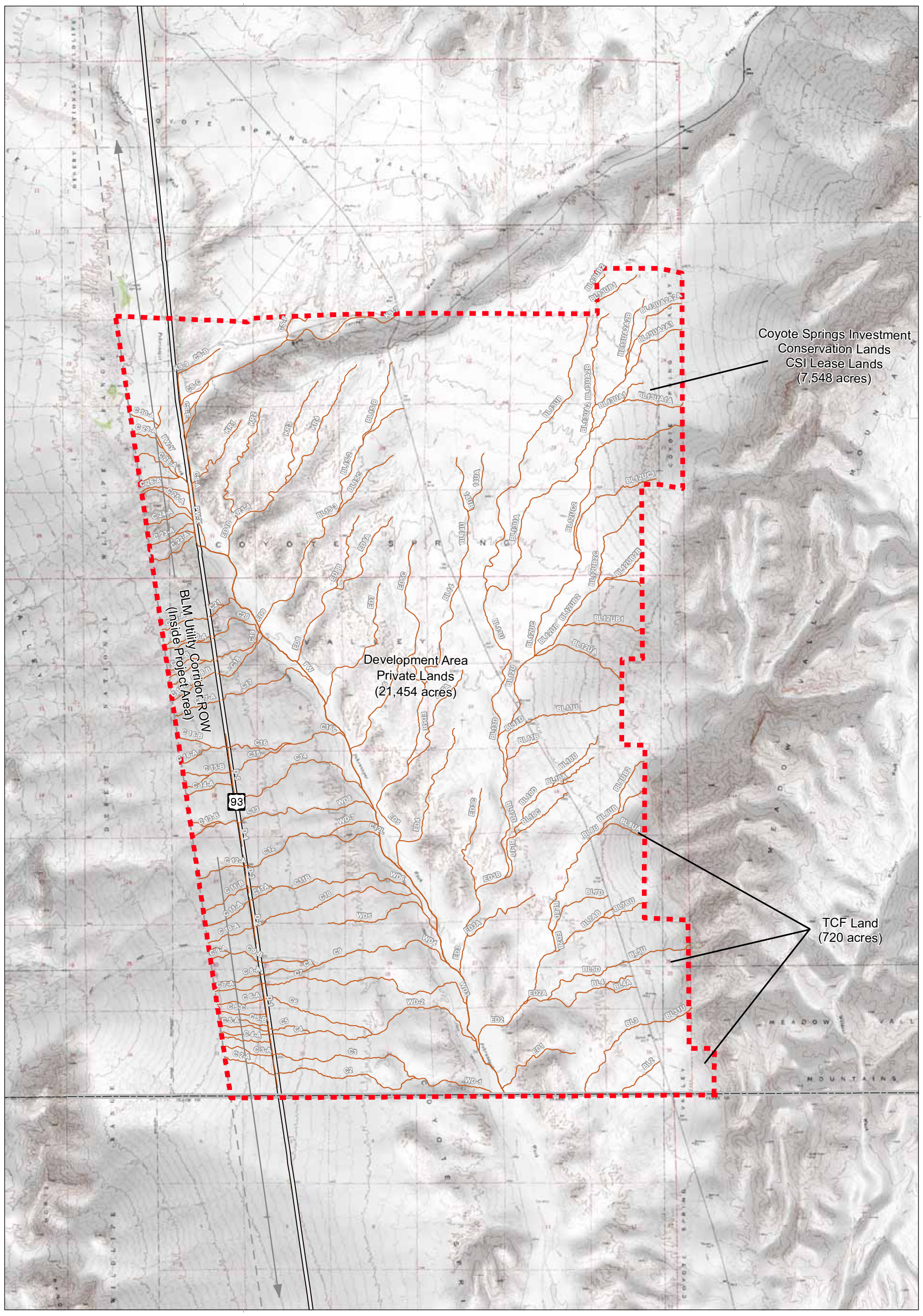
The Huffman-Broadway Group, Inc. and RCI (2007) examined aquatic resources in the Development Area and BLM utility corridor with respect to the above discretionary exemptions and SWANNC exclusion from CWA regulation. They concluded that no areas were found that could either potentially be exempted or excluded from regulation.

4.2.2 Aquatic Habitat Functions

Table 4-4 describes aquatic functions and identifies which functions are performed by the desert dry washes in the project area. On the basis of the analysis, seven aquatic habitat functions are performed within the Development Area and BLM utility corridor. The principal functions were determined to be flood flow alteration, sediment/shoreline stabilization, and wildlife habitat within the Development Area and BLM utility corridor. The significance of these functions to the Muddy River and Lake Mead is speculative at best. Stormwater flows and sediments are trapped before they reach the Muddy River from man-made structures that waters flowing down the Pahranagat Wash from the project development site must pass through. These include a culvert located under Highway 168, a sedimentation basin located immediately south of Highway 168, and two dams designed to capture water for livestock (which also trap sediments upgradient) which are located at the approximate entrance to Arrow Canyon.

[7] As described in the preamble discussion of the Corps regulations in the November 13, 1986, federal Register, certain areas that meet the technical definition of wetlands generally are not considered waters of the U.S. (33 CFR 328.3(a)). Such areas include:

a. Non-tidal drainage and irrigation ditches excavated on dryland;
b. Artificially irrigated areas which would revert to upland if the irrigation ceased;
c. Artificial lakes or ponds created by excavating and/or diking dryland to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
d. Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dryland to retain water for primarily aesthetic reasons; and
e. Water-filled depressions created in dryland incidental to construction activity and pits excavated in dryland for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States.



Study Area Boundary
Pahranagat Wash
Waters of the United States (WOUS)
Highway
State Route
County Line

0.5 0.25 0 0.5 1 Miles

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Figure 4-5
Unverified Waters of the United States within the Project Area

ENTRIX

Table 4-4 Aquatic Habitat Functions Within Potential WOUS in the Project Area

Function	Description	Status
Groundwater Recharge/Discharge	Habitat serves as groundwater recharge and/or discharge area. Recharge relates to the potential for the habitat to contribute water to an aquifer. Discharge relates to the potential for the habitat to serve as an area where groundwater can be discharged to the surface.	Present (recharge only)
Floodflow Alteration (Storage & Desynchronization)	Habitat aids in the reduction of flood damage by attenuating floodwaters for prolonged periods following precipitation events.	Present
Fish and Shellfish Habitat	WOUS provides seasonal or permanent habitat for fish and/or shellfish.	Not Present
Sediment/Toxicant/ Pathogen Retention	Habitat aids in the prevention of the degradation of water quality by trapping sediments, toxicants or pathogens.	Present
Nutrient Removal/Retention/ Transformation	Habitat aids in the prevention of adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.	Present
Production Export (Nutrient)	Habitat produces food or usable products for human or other living organisms.	Present
Sediment/Shoreline Stabilization	Habitat aids in the stabilization of stream banks and shorelines against erosion.	Present
Wildlife Habitat	WOUS provides habitat for various types and populations of animals. Both resident and/or migrating species are considered.	Present
Source: Adapted from: U.S. Army Corps of Engineers, New England Division. 1995. *The Highway Methodology Workbook, Supplement – Wetland Functions and Values: A Descriptive Approach.* November. 32 pp.		

4.2.3 Aquatic Habitat Values

Table 4-5 describes aquatic habitat values and identifies whether these values are performed by the desert dry washes in the project area. On the basis of the analysis, all of the values described below are present.

Table 4-5 Aquatic Habitat Values Within Potential WOUS in the Project Area

Value	Description	Status
Recreation	Effectiveness of the habitat to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the habitat, whereas non-consumptive opportunities do not.	Present
Education/Scientific	Relates to the effectiveness of the habitat as a site for an “outdoor classroom” or as a location for scientific study or research.	Present
Uniqueness/Heritage	Relates to the effectiveness of the habitat to produce certain special values. Special values may include such things as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals or geologic features.	Present
Visual Quality/Aesthetics	Relates to the visual and aesthetic qualities of the habitat.	Present
Threatened or Endangered Species Habitat	Relates to the effectiveness of the habitat to support threatened or endangered species.	Present

4.3 HYDROLOGY AND WATER QUALITY

4.3.1 Surface Water and Groundwater Resources

4.3.1.1 Surface Water

There are no perennial surface waters within the project area. The immediate watershed is bound on the west by the Sheep Mountain Range and on the east by the Meadow Valley Mountains. The Pahranagat Wash incised ephemeral channel is a dry wash that bisects the CSI lands as it runs from northwest to southeast. It is connected to the north with the Pahranagat Valley and exits CSI lands to the south. Surface water reservoirs store water in the southern Pahranagat Valley and little runoff enters the Coyote Spring Valley from the north. The Pahranagat Wash incised ephemeral channel is flanked by alluvial fans. These upland fans are bisected with numerous dry washes and arroyos that connect with the Pahranagat Wash incised ephemeral channel. Some of the alluvial fans are highly incised, while others are relatively smooth.

The Pahranagat Wash incised ephemeral channel runs through Pahranagat Valley to the north. To the south, during large storm events (such as the 100-year flood), the Pahranagat Wash incised ephemeral channel may be a tributary to the Muddy River before it enters the Colorado River at Lake Mead, an interstate water. There are several other large tributaries joining with the Pahranagat Wash incised ephemeral channel to form the Arrow Canyon Wash, which flows into the Muddy River (Figure 4-6). The Kane Springs Wash runs from northeast to southwest along the Kane Springs Wash fault between the Delamar and Meadow Valley mountains. It is a dry wash that is a tributary to the Pahranagat Wash incised ephemeral channel. However, because of the nature of the 2,500+ acre surface water reservoirs in the Pahranagat Valley, the majority of the ephemeral flows that enter the Pahranagat Wash in the project area is from the Kane Springs Wash, which does not have reservoirs upstream (Huffman, pers. comm. 2008).

The Pahranagat Wash incised ephemeral channel is typically dry; however, during large storm events, it may carry large flows. The 100-year maximum peak discharge in the Pahranagat Wash incised ephemeral channel has been estimated to be about 10,000 to 15,000 cubic feet per second (cfs) at the State Route 168 crossing. A 10-year event is estimated to have a magnitude of about 4,273 cfs. The 10-year event would be contained within existing channels and drains through the existing culverts under State Route 168. Larger events could exceed the capacity of the existing culverts and may result in standing water upgradient of State Route 168.

Surface flows in the project area are generated from local precipitation falling within the area or from precipitation falling in the Sheep Range to the west, the Meadow Valley Mountains to the east, and their respective alluvial fans. Runoff from precipitation falling in the Sheep Mountains or associated alluvial fans flows across coalescing alluvial fans to the Pahranagat Wash incised ephemeral channel. The alluvial fan surfaces are broad, gently sloping to the east with a high density of small braided channels.

On the west side of the Pahranagat Wash incised ephemeral channel, culverts (ranging in size from 24 inches to seven feet in diameter) under U.S. Highway 93 control the stormwater flows from the Sheep Range to the Development Area. Stormwater flows from the coalescing alluvial fans are intercepted by a large ditch paralleling the entire length of the west side of U.S. Highway 93. Water enters the ditch and flows along until it encounters a culvert under U.S. Highway 93. These culverts control the hydrology of the desert dry washes entering the Pahranagat Wash incised ephemeral channel. Similarly, stormwater flows from the Meadow Valley Mountains are altered by culverts and low water crossings associated with Old Highway 93. In addition numerous culverts had been removed decades ago and the drainage area blocked with soil and/or roadway materials to include concrete and asphalt. Over 45 desert dry wash drainages up gradient from the Old Highway 93 (Figure 4-6) have been blocked. These drainages no longer flow to the Pahranagat Wash during stormwater events.

The drainages crossing U.S. Highway 93 generally do not flow every year. Rather they flow periodically during large localized regional rain events that typically occur during the winter months (January through March) or during localized summer thunderstorms (July and August) (NOAA 2005; pers. comm. Nick McMurray, NDOT, 8-29-06; RCI quarterly observations 2001 through 2005, pers. comm. Lynn Zonge, cited in The Huffman Broadway Group, Inc. and RCI 2007).

Only during very large storm events (100-year events or larger) would the Pahranagat Wash incised ephemeral channel have the potential for continuous flow to the Muddy River, before it enters the Colorado River at Lake Mead, an interstate water. The Pahranagat Wash incised ephemeral channel enters the North Fork of the Muddy River (via the Arrow Canyon Wash) downstream of the Development Area (Figure 4-6). Several other large tributaries join with the Pahranagat Wash incised ephemeral channel to form the Arrow Canyon Wash, which flows into the Muddy River during periods of heavy precipitation. The confluence is near, but upgradient of, the numerous springs that represent the headwaters of the North Fork of the Muddy River. The Meadow Valley Mountains, southeastern quadrant, contains numerous additional ephemeral, dry wash channels that also convey stormwater to the North Fork of the Muddy River. The Meadow Valley Wash, a major tributary to the Muddy River, enters the Muddy River channel above Glendale, Nevada.

4.3.1.2 Groundwater

Two aquifers lie beneath the project area. An upper, basin-fill (alluvial) aquifer is confined by the topographic basin and estimated to be about 1,000 feet thick (Dettinger et al. 1995). The lower aquifer underlying the Coyote Spring Valley is part of the large, regional groundwater flow system commonly referred to as the "Carbonate Aquifer" or the White River Flow System (Eakin 1966, LVVWD 2001) and underlies a large portion of southern Nevada. The White River Groundwater Flow System encompasses thirteen topographic basins, including the Coyote Spring Valley topographic basin that contains the Development Area (Figure 4-7). The Carbonate Aquifer transmits groundwater from basin to basin (Figure 4-8). Below Coyote Spring Valley, this aquifer is estimated to be as much as 15,000 feet thick. In Coyote Spring Valley, these aquifers are separated by a lake-bed deposit. Wells drilled in CSI lands show that the depth to groundwater below the valley floor is generally greater than 400 feet.

The carbonate rocks in the aquifer consist predominantly of limestone and dolostone (Dettinger et al. 1995). The Middle and Upper Cambrian Bonanza Kind Formation (and partly equivalent Highland Peak Formation and Muav Limestone) forms the basal part of the carbonate aquifer in the White River (as well as the Colorado and Death Valley) Groundwater Flow System (Belcher et al. 2002, Laczniak et al. 1996, Winograd and Thordarson 1975, as cited by Page et al. 2006). The upper portion of the carbonate aquifer consists of Upper Mississippian and Lower Permian units, including the Bird Spring Formation and partly equivalent Callville Limestone and Pakoon Dolomite (Page et al. 2006).

The Carbonate Aquifer system is the focus of ongoing studies and monitoring, because a portion of the groundwater flow system discharges into the Warm Springs Area and various tributaries of the Muddy River. The "Basin and Range Carbonate Aquifer System Studies" (BARCASS) is mandated by the Lincoln County Land Act and is being carried out by the USGS, the Desert Research Institute, and the Utah State Engineers Office (Welch and Bright 2007).

Current estimates, which may be revised based on the results of BARCASS, of the total underflow of the Coyote Spring Valley is about 53,000 acre-feet per year (afy), about 50,000 afy of which comes from upgradient basins to the north. However, there is considerable uncertainty around these numbers (State Engineer Order Number 1169). The majority of this underflow is generally thought to discharge to the surface via approximately 20 springs in the Warm Springs Area, located to the south of the Development Area. These springs form the headwaters of the Muddy River. Eakin (1966, as cited by USFWS 2006) estimated discharge from these springs to be about 37,000 afy, while Page et al. (2005, 2006) estimate discharge from the White River Groundwater Flow System to be 36,000 afy. Recent discharge measurements at the USGS Moapa Gage, downstream of the discharge area, have averaged about 25,000 afy (Provencher and Andress 2004). The difference between these two values likely is due to surface diversions between the springs and the downstream gage. A small portion of the spring discharge may originate from the Lower Meadow Valley Wash.

About 16,000 to 17,000 afy of the underflow is thought to bypass the Muddy River Area and flow into more southerly groundwater systems (State Engineer Order Number 1169). The Muddy River is fully appropriated, pursuant to the Muddy River Decree (State Engineer Order Number 1169).

Groundwater recharge to the aquifers occurs from precipitation falling over the basins and the adjacent mountain ranges. Recharge of the basin fill aquifer comes from precipitation in the surrounding mountain ranges, principally the Sheep Mountains. Dettinger et al. (1995) estimate that about 11,000 afy recharge in the

Sheep Mountains. Most of this recharge occurs on the Coyote Spring Valley side of the range, due to geological constraints. Most of this water recharges the basin fill aquifer, but some portion likely recharges to the Carbonate Aquifer as well. The Carbonate Aquifer is recharged from precipitation in the mountains and in the northern part of the flow system (outside of the Coyote Spring Valley). Recharge rates to the Carbonate Aquifer within the Coyote Spring Valley, Muddy River Springs, Hidden Valley, Garnet Valley, Black Mountains, and Lower Moapa Valley are estimated to be 3,000 to 6,800 afy using different methods of estimation (State Engineer Order Number 1169). Recharge rates for all southern Nevada aquifers have been estimated at 160,000 afy, with cumulative discharges estimated at 77,000 afy.

Groundwater flow through the carbonate rocks is mostly through fractures and faults (Page et al. 2005). Carbonate rocks are soluble in groundwater, thus dissolution factors are important in the development of secondary porosity and permeability. Potentiometric maps indicate that flow travels generally southward, based on water levels in wells (Wilson 2001, Thomas et al. 1986, as cited by Page et al. 2005).

Groundwater flow in the Carbonate Aquifer from the Coyote Spring Valley to the Warm Springs Area appears to be through a zone of high permeability, with transmissivities of 230,000 to 360,000 feet^2/day (USFWS 2006). The hydraulic gradient of the area is very low (6.3 x10^{-5}). Another zone of high transmissivity in Coyote Spring Valley is indicated by water wells that exhibit extremely high hydraulic conductivity (900 feet^2/day at MX-5) (Dettinger et al. 1995, as cited by Page et al. 2005). USFWS (2006) concludes that these factors suggest a zone of well-developed hydraulic continuity and high flow rates extending between Coyote Spring Valley and the Warm Springs Area, further indicating that pumping within this zone would be expected to cause effects throughout most of the areas within the high transmissivity zone.

Dettinger et al. (1995) hypothesized that the Muddy River Springs partly exist because thick basin deposits of the lower Meadow Valley Wash Basin may form a groundwater barrier to eastward flow from the springs. Muddy River Springs is structurally controlled by a broad north-striking fault zone that forms the east range front of the southern Meadow Valley Mountains and Arrow Canyon Range (Page et al. 2005, Schmidt et al. 1996, Schmidt and Dixon 1995, as cited in Page et al. 2006). The intersection of east-striking faults with north-striking faults potentially enhances permeability (Page et al. 2006).

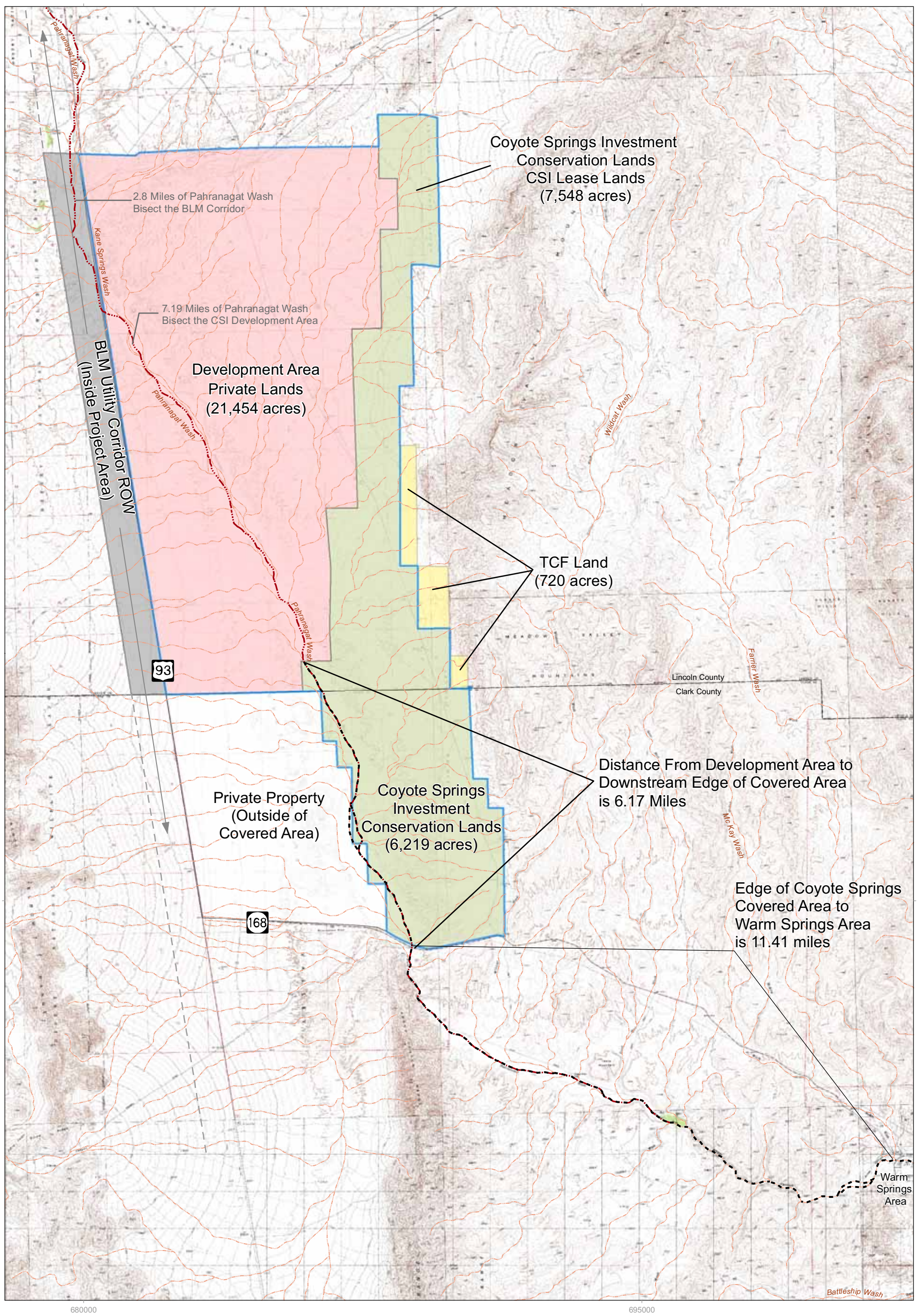
4.3.1.3 Water Rights

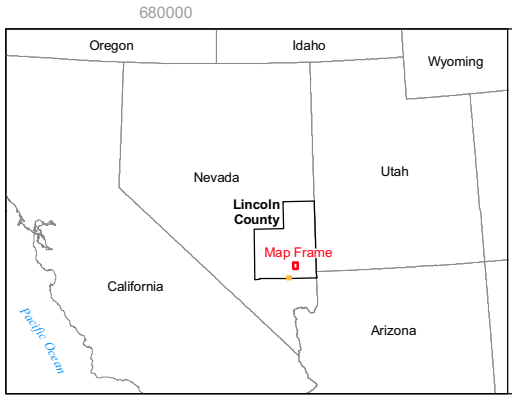
In 1985, the Nevada Legislature authorized a program, a cooperative effort between the State of Nevada and the federal government, to study the carbonate-rock aquifer system of eastern and southern Nevada. Preliminary findings indicated that large-scale development (sustained withdrawals) have the potential to result in water-level declines in the aquifer system, deplete stored water, reduce flow of warm springs that discharge from regional aquifers, and deplete storage in nearby aquifers. However, Dettinger (1989) indicated that confidence in prediction of the effects of development was low and recommended that development be staged gradually and hydrologic conditions be monitored.

In Order 1169, the Nevada State Engineer identified 52,665 acre-feet of existing permitted rights within six basins (as shown below) authorizing appropriations in an area underlain by the Carbonate Aquifer or directly from the Carbonate Aquifer.

Basin	Acre-Feet
Coyote Spring Valley (Basin 210)	16,300
Black Mountain (Basin 215)	10,216
Garnet Valley (Basin 216)	3,380
Hidden Valley (Basin 217)	2,200
Muddy River Springs (Basin 219)	14,756
Lower Moapa Valley (Basin 220)	5,813
Total	**52,665**

In addition to the water rights listed above, all water discharged collectively from the springs in the central part of the Upper Moapa Valley is fully appropriated pursuant to the Muddy River Decree, a 1920 adjudication.





Land Status

- CSI Covered Area
- CSI Development Area
- Conservation Lands
- The Conservation Fund Parcels
- BLM Utility Corridor
- Private Property
- Ephemeral Channel
- Desert Dry Wash

1 0.5 0 1 2 Miles

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Figure 4-6
Ephemeral Channels and Dry Desert Washes
In and Near the CSI Project Area in
Lincoln County, Nevada

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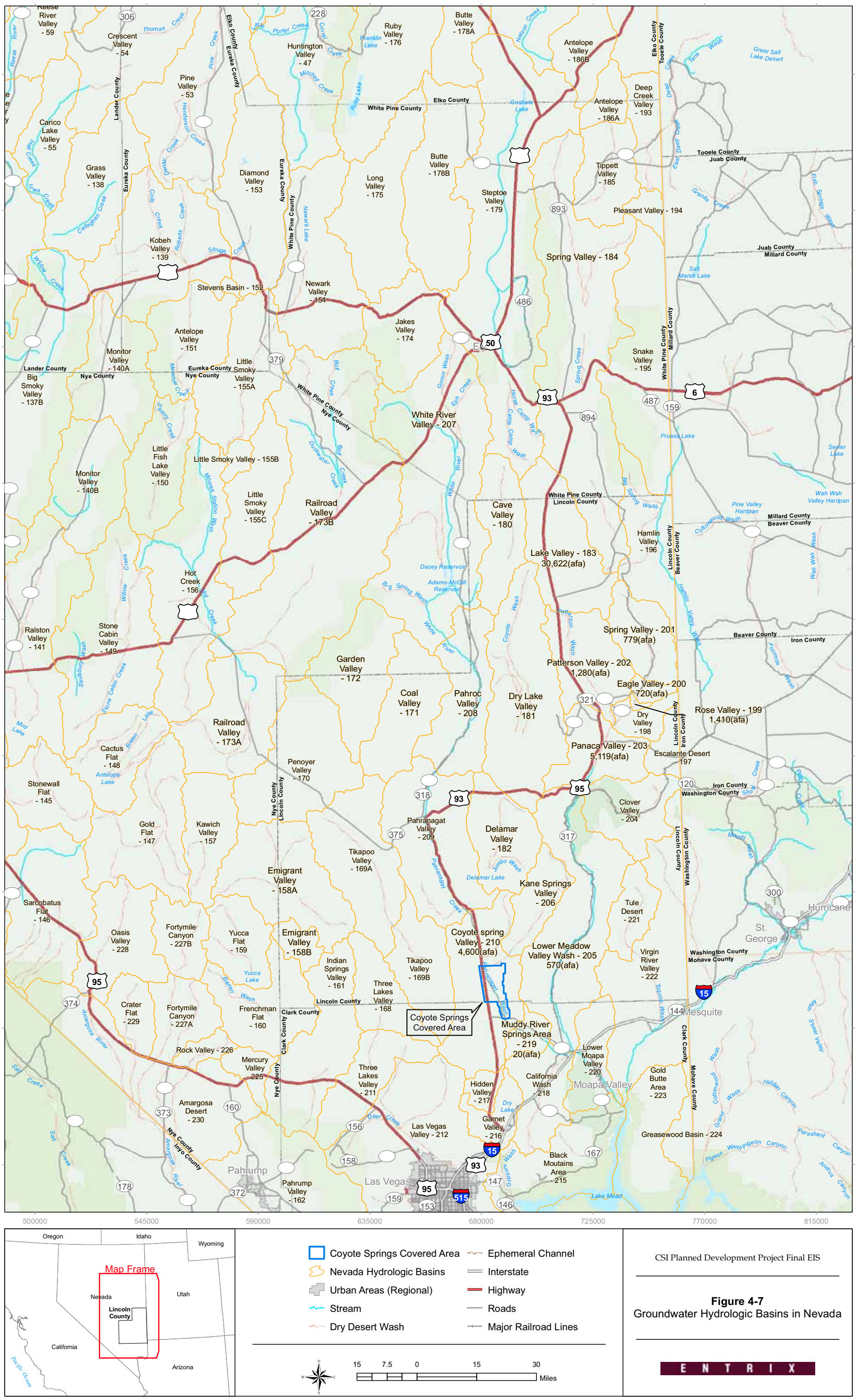

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Figure 4-7
Groundwater Hydrologic Basins in Nevada

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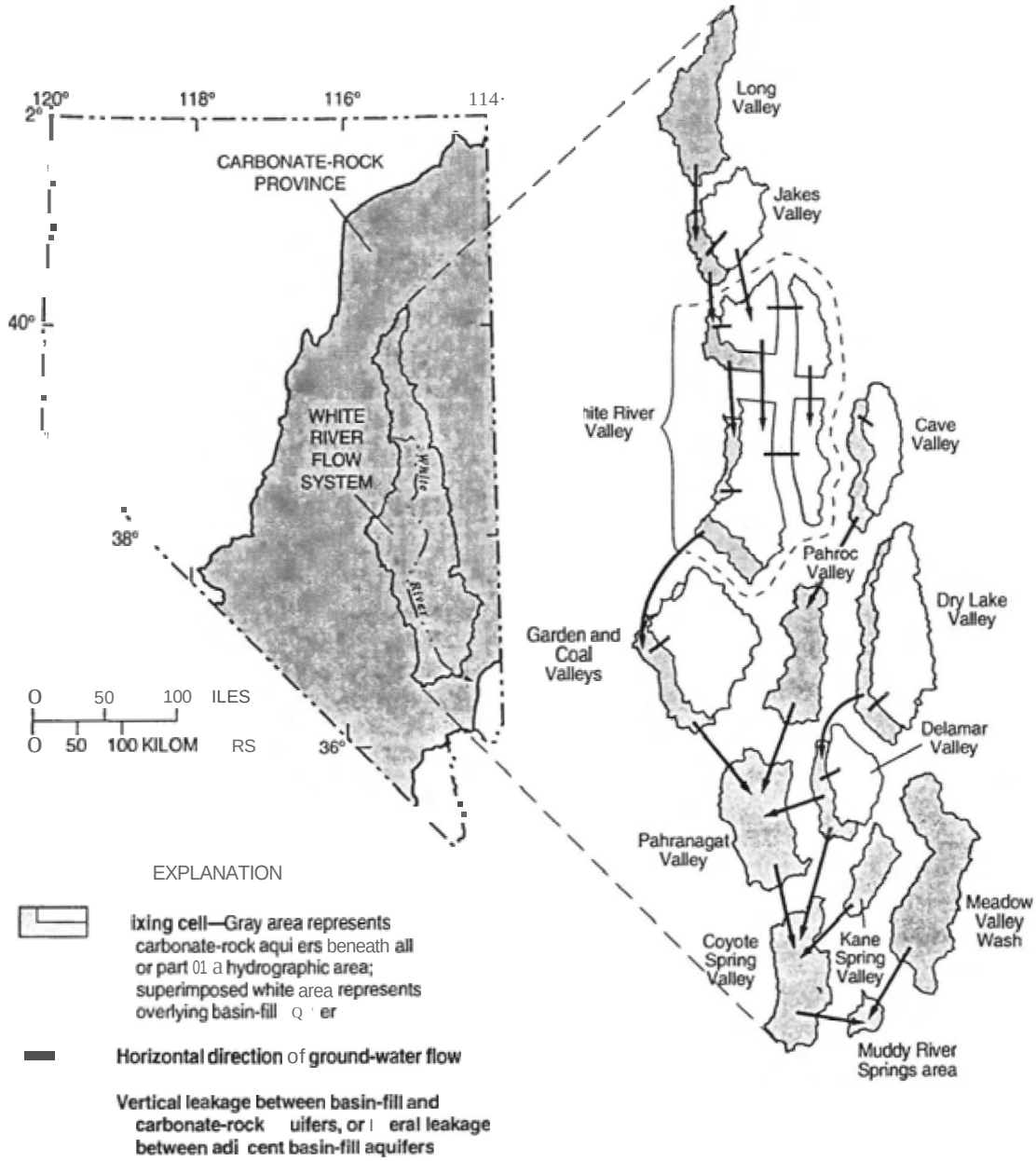


Figure 14. SChemalic three-dime ·onal representation of mixing-ce mode used l:o simulate now and isotopic mix· ing in White River now system (modified from Kirk and Campana, 1988. fig. 11).

Figure 4-8
Schematic three-dimensioinal representaion of mixing-cell model used to simulate flow and isotopic mixing in White River flow system (from Dettinger et al. 1995 Figure 14)

A water right certificate (15097) was issued to the USFWS on August 15, 1991, for instream (non-consumptive) use for 3.5 cfs for the benefit of the Moapa dace and other species. Although well after the 1920 adjudication, certificate 15097 (Permit 56668) was issued by the Nevada State Engineer because it is non-consumptive.

LVVWD and CSI have pending requests for appropriation of approximately 135,000 afy from the Carbonate Aquifer within the Coyote Spring Valley Hydrographic Basin, in addition to existing rights. Subsequent to administrative hearings regarding these applications, the Nevada State Engineer issued Order Number 1169 on March 8, 2002 (Nevada State Engineer 2002). This order holds all groundwater applications pending or to be filed in several basins related to the Carbonate Aquifer (including, among others, Coyote Spring Valley, Upper Moapa Valley, and Lower Moapa Valley) in abeyance pending completion of additional hydrological studies. Testimony and evidence from the administrative hearing indicated that it is unknown what quantity of water may be available for withdrawal without unreasonable and irreversible impacts. The purposes of the aforementioned studies are to assess the effects of pumping on down-gradient flows (spring discharge in the Warm Springs Area). No additional water rights will be issued to appropriate waters from the Coyote Spring Valley Basin until after the required pump test and report are completed and the Nevada State Engineer has determined that he has sufficient data to support a ruling in favor of approving one or more pending applications. As a result, development of the Coyote Springs new town was limited to Clark County. Development in Lincoln County can not occur without obtaining water resources sufficient to serve the development.

In 2002, CSI entered into the Settlement Agreement with the SNWA, LVVWD, and MVWD to settle all claims to groundwater in the Coyote Spring Valley Hydrographic Basin. A component of this agreement established that SNWA would conduct the pump test and monitoring requirements associated with CSI's groundwater permits and the first 16,000 afa of CSI's pending applications in Coyote Spring Valley. The Regional Water Monitoring Plan was approved by the Nevada State Engineer on March 14, 2005 and is being implemented.

CSI currently holds 2,600 acre-feet of water rights within the Coyote Spring Valley (Permit Nos. 70429, 70430, 74094 and 74095), which are not subject to Order 1169 except to the extent that they are produced in furtherance of the study required by the Order. Two thousand (2,000) acre-feet of the original 4,600 acre-feet of water rights held by CSI was conveyed to the Clark County-Coyote Springs Water Resources GID. These water rights will be utilized in developing lands in Clark County. CSI has completed the wells authorized under Permits 70429 and 70430. CSI has drilled the well authorized under Permit No. 74094 and commenced drilling of the well authorized under Permit No. 74095 in late 2006. Under a condition of each permit, CSI is required to monitor surface flows and groundwater levels (consistent with the monitoring plan approved by the Nevada State Engineer under Order Number 1169) and submit annual monitoring reports to the Nevada State Engineer as prepared and submitted by SNWA pursuant to the Settlement Agreement. Similar monitoring may be conducted as part of this CSI MSHCP in Lincoln County.

Water rights in the Coyote Spring Valley Basin held by CSI and affiliates will be used for separate projects other than the proposed development in Lincoln County analyzed in this EIS. However, CSI and affiliates do currently hold water rights in other hydrogeographic basins which may be used as water sources for the project analyzed in the action alternatives of this EIS (Table 4-6).

Table 4-6 Water Rights Owned by CSI or an Affiliate Potentially Available for Use in Serving the CSI Development in Lincoln County[a]

Administrative Groundwater Basin Name[a]	Administrative Groundwater Basin Code[b]	Amount (afa)[c,d]	Status	Owner/Water Purveyor	Federal Actions Required	ESA Consultation Status
Coyote Spring Valley	210	4,600±e	Certificated, committed to development in Clark County	CSI		Addressed under previous ESA consultation, 1-5-05-FW-536 Tier 01, March 2, 2006
Muddy River Springs Area	219	20± alluvial	Certificated, committed to MVWD as part of the backup water supply under the Muddy River MOA documents	CSI/MVWD		Addressed under previous ESA consultation, 1-5-05-FW-536, January 30, 2006
Lower Meadow Valley Wash	205	570± alluvial	Permitted, proposed for mitigation use	CSI	unknown at this time	Will be undertaken when appropriate after decision is made regarding the use of the water
Lake Valley	183	30,622±; 24,100 from alluvial aquifer, remaining are surface water rights	Permitted and certificated, and currently in use; substantially all of the certificated groundwater is subject to pending applications to change the manner and place of use from irrigation in Basin 183 to municipal in Basin 210.	TRP	one or more ROW grants	Will be undertaken in connection with the proposed transfer of specifically identified water rights
Panaca Valley	203	5,119± alluvial	certificated	TRP	if used, a ROW grant will be necessary	Will be undertaken in connection with the proposed transfer of specifically identified water rights
Patterson Valley	202	1,280± alluvial	certificated	TRP	if used, a ROW grant will be necessary	Will be undertaken in connection with the proposed transfer of specifically identified water rights
Rose Valley	199	1,410± alluvial	certificated	TRP	if used, a ROW grant will be necessary	Will be undertaken in connection with the proposed transfer of specifically identified water rights
Eagle Valley	200	720+ alluvial	certificated	TRP	if used, a ROW grant will be necessary	Will be undertaken in connection with the proposed transfer of specifically identified water rights
Spring Valley	184	779± alluvial	certificated	TRP	if used, a ROW grant will be necessary	Will be undertaken in connection with the proposed transfer of specifically identified water rights

Total Water Rights Owned by CSI or TRP potentially available for water supply for CSI development in Lincoln County, subject to State Engineer approval, is equal to 36,000± afa.

[a]Nevada Affiliates include Tuffy Ranch Properties, LLC.
[b]Nevada Water Resources Division, State Water Engineer's office in Carson City.
[c]No transfer of surface water to the Development Area is intended.
[d]Unless otherwise noted, water rights would be for the groundwater carbonate aquifer, excludes stock watering rights owned by CSI or an affiliate whether such right is a surface or groundwater rights.

4.3.2 Water Quality

There are no water quality data available for Pahranagat Wash incised ephemeral channel or other desert dry washes in the project area. Almost all of the water upgradient of the project area along the Pahranagat Wash is intercepted by over 2,500 acres of reservoirs used to support farming activities and the U.S. Fish and Wildlife Service Pahranagat National Wildlife Refuge. In addition, just before entering the project site under U.S. Highway 93 any remaining waters are intercepted as the Pahranagat Wash flows through the Western Elite Land Fill and Aggregate Mining Operations. Within the project area, ephemeral washes would be impacted only by brief flow periods during storm events. Over the past several decades flows down the Pahranagat Wash adjacent to the project area have resulted from flows received from the Kane Springs Wash (ephemeral dry wash), which enters the Pahranagat Wash on the north west corner of the project area near the eastside of the U.S. Highway 93 Pahranagat Wash Culvert crossing. The Pahranagat Wash incised ephemeral channel, which may be one of the tributaries during large storm events, such as the 100-year flood, to the Muddy River (via the Arrow Canyon Wash), enters the North Fork of the Muddy River approximately 14 miles below the project area and 17 miles downstream of the Development Area (see Figure 4-3). Stormwater flowing down the Pahranagat Wash from the project site must pass a culvert located under Highway 168, a sedimentation basin located immediately south of Highway 168 and two dams designed to capture water for livestock (also captures sediment) which are located at the approximate entrance to Arrow Canyon. The confluence is near but upgradient of the numerous springs that represent the headwaters and contribute perennial flow into the North Fork of the Muddy River. The Meadow Valley Mountains contain numerous additional ephemeral channels that also convey stormwater to the North Fork of the Muddy River. The Meadow Valley Wash, a major tributary to the Muddy River, enters the Muddy River channel above Glendale, Nevada (see Figure 4-6).

Water quality during storm events in the Pahranagat Wash incised ephemeral channel, which may flow during significant (100-year or greater) events to the Muddy River, is influenced by the natural sediment yield of the watershed, as well as local runoff from U.S. Highway 93. Existing stormwater flows apparently have high sediment yields based on observed sediment deposition along U.S. Highway 93 following storms and the subsequent required removal by NDOT (ENTRIX et al. 2005). Nevada has listed the Muddy River under CWA 303(d) as an “Impaired Water Body” for select pollutants or stressors of concern (NDEP 2002). The Muddy River, a perennial river, is located approximately 17 miles downstream of the Development Area. The numerous perennial springs that feed into the North Fork of the Muddy River are recognized as the headwaters of the North Fork. Pahranagat Wash incised ephemeral channel may contribute ephemeral flows to the North Fork only during significant (100-year flood or greater) storm events. The Meadow Valley Wash, a major tributary, contributes perennial flow to the Muddy River at its confluence above Glendale, Nevada. Figure 4-6 illustrates the relationship of the tributaries to the Muddy River.

4.4 CULTURAL RESOURCES

This cultural resource evaluation includes both previously recorded archaeological and historical sites within the Area of Potential Effect (APE) identified by Knight & Leavitt Associates, Inc. (K&LA) through a literature review, as well as additional archaeological and historic sites identified through an inventory of approximately 22,370 acres within the project area between April and December of 2006. An additional 3,555 acres within the project area will be surveyed in the future under the provisions of either the existing MOU or a new MOU or PA.

The following information summarizes known cultural resources within the APE (Figure 4-9). The term “historic resource” has been used to identify archaeological, cultural, and historical resources that have been determined to have historical significance. Such resources include properties listed on or eligible for the NRHP or as national or local historic landmarks.

4.4.1 Archaeology

The literature review revealed that four archaeological sites and multiple isolates had been previously identified and formally recorded within the APE. The 2006 Class 3 archaeological survey conducted by Knight & Leavitt Associates, Inc. of the project area revealed multiple additional isolates and included the

identification of 23 new archaeological sites, as well as the re-recordation of four previously-identified archaeological sites. A detailed summary of the archaeological resources in the project area is presented below.

Numerous artifacts, mostly flakes, are located within the APE but not contained within designated site boundaries. A small percentage of these artifacts can be defined as formal tools, including bifaces (58 total), projectile points (3 total), scrapers (17 total), and ground stone (14 total). The three projectile points, representing two Elko Side-notched points (#281 and 3831) and a Great Basin Stemmed point (#3606), were culturally or chronologically diagnostic and are typical of the Gypsum period (ca. 5,000-2,000 B.P.; Heizer and Hester 1978) and the Lake Mojave period (ca. 10,000-7,500 B.P.; Heizer and Hester 1978; Warren and Crabtree 1986), respectively (Knight & Leavitt Associates, Inc. 2006). A total of 27 sites within the APE were identified and formally recorded (K&LA 2006). These sites varied in size, type, permanence, and chronology. The sites have been inventoried, but not formally evaluated, for historical significance. Twenty-two of the 27 prehistoric sites were evaluated as being potentially eligible for the NRHP under Criterion D (defined as "has yielded, or may be likely to yield, information important to prehistory or history").[8] Information about these archaeological resources is summarized in Table 4-7. Traditional cultural properties are defined as eligible for inclusion in the NRHP because of their "association with cultural practices or beliefs of a living community that a) are rooted in that community's history and b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990). No previously identified traditional cultural properties have been identified within the project APE.

Table 4-7 Archaeological Sites (Knight Leavitt & Associates, Inc. 2006)

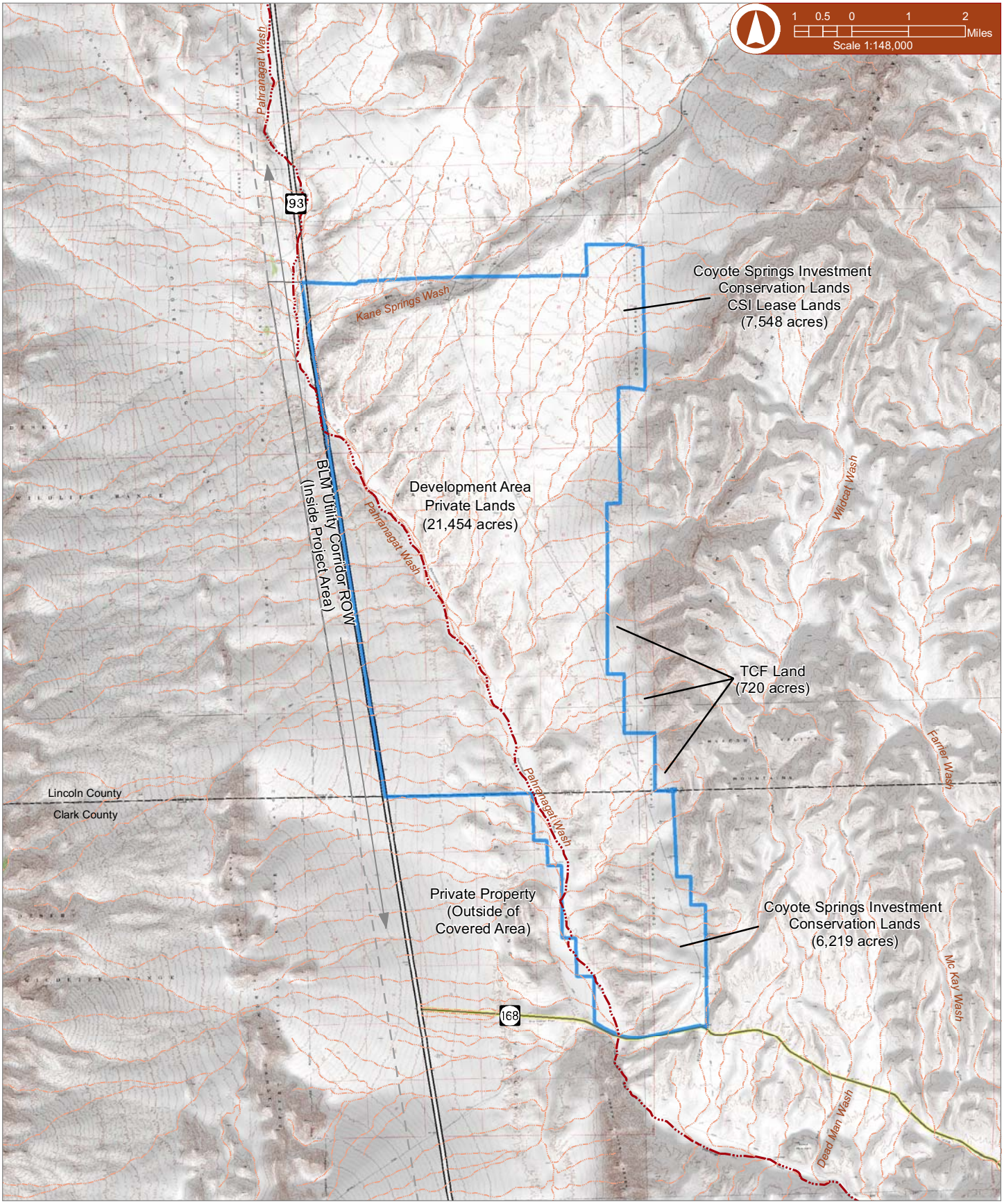
Type	Age	Historic Significance/ NRHP Criterion	Number of Sites
Lithic Scatter	Archaic Period	NRHP-ineligible	1
Lithic Quarry and Activity Area	Ca. 600-1100 A.D.	NRHP-eligible (D)	1
Lithic Scatter	Prehistoric	NRHP-ineligible	4
Lithic Quarry and Activity Area	Prehistoric	NRHP-eligible (D)	18
Aboriginal Trail and Lithic Scatter	Prehistoric	NRHP-eligible (D)	1
3 Single-Stack Rock Rings and Lithic Scatter	Prehistoric	NRHP-eligible (D)	1
Rock Alignment and Lithic Scatter	Prehistoric	NRHP-eligible (D)	1

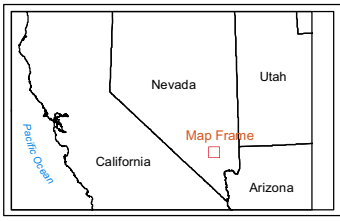
4.4.2 History

Four historic cultural resources were identified within the APE; all are associated with north-south transportation routes through the area. Beginning as early as 1849, Anglo-Americans traveled through the Coyote Spring Valley. A single case of settlement in the valley is a ranch dating to the early 20th century located in T11S, R62E, Section 24. This area is northwest of the current project area and west of US-93. While an alternate route of the Mormon Trail passed through Crystal Springs, 46 miles to the north of the project area, and ranching was established in Coyote Springs (12 miles to the north), it does not appear that a substantive north-south route was forged until the late nineteenth century. With significant mining operations opening up in places such as Hiko, Irish Mountain, Pahranagat Lake, and Crescent in 1865, the need for an efficient transportation network precipitated the blazing of roads throughout southern Nevada.

The historic resources in the APE consist of a road designated as the "Road from Hiko to Muddy Valley" on an 1881 Government Land Office (GLO) map; the Lincoln County portion of the Old Highway 93, which was built to replace the Road from Hiko to Muddy Valley and first appeared on Official State Highway Maps in 1932; a scatter of historic ranch debris that most likely dated to construction of Old Highway 93 in the early 1930s; and an undated wagon road running north-south (K&LA 2006). All four resources were evaluated as being potentially eligible for the NRHP (K&LA 2006). Information about these historic resources is summarized in Table 4-8.

[8] These findings are contingent upon consultation and concurrence of the Nevada SHPO.





CSI Covered Area
BLM Utility Corridor
Highway
Ephemeral Channel
State Route
Desert Dry Wash

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Figure 4-9
Area of Potential Effect for the
Proposed CSI Planned Development Project
(pending Nevada SHPO concurrence)

ENTRIX

Table 4-8 Historic Resources (Knight Leavitt & Associates, Inc. 2006)

Site Number	Site Name	Age	Historic Significance/ NRHP Criterion
26LN5009	Hiko to Muddy River Road	Ca. 1881	NRHP-eligible (A[a])
26LN5010	Old Highway 93	Ca. 1932	NRHP-eligible (A and D[b])
26LN5011	Historic Ranch Debris	Ca. early 1930s	NRHP-eligible (A and D)
26LN5012	Historic Wagon Trail	19th century	NRHP-eligible (A and D)

[a]Association with events that have made a significant contribution to the broad patterns of our history
[b]Has yielded, or may be likely to yield, information important to prehistory or history

4.5 SOILS AND GEOLOGICAL RESOURCES

Coyote Spring Valley, straddling Lincoln and Clark counties, is bordered by the Meadow Valley Mountains to the east, Arrow Canyon Range to the southeast, Sheep Range to the west, the Delamar Mountains to the north, and bisected by the Las Vegas Range to the southwest. The Pahranagat Wash incised ephemeral channel is connected to the Pahranagat Valley north of Coyote Spring Valley. Elevations within the valley range from about 9,900 feet on the west in the Sheep Range to about 2,134 feet at the valley outlet along the Pahranagat Wash incised ephemeral channel. On the valley floor, many washes drain the bounding upland areas and the broad alluvial fans. Kane Springs Wash is a tributary to the Pahranagat Wash incised ephemeral channel from the northeast. Badland topography is found in the east-central part of the basin where the Muddy Creek Formation is exposed.

4.5.1 Geology

Coyote Spring Valley is composed of four major geologic units: alluvium, Tertiary valley-fill deposits, Tertiary volcanics, and Paleozoic carbonate rocks.

The alluvium is found over the valley floor, composed of interbedded gravels, sand, silt, and clay. Two north-south-trending, alluvium-filled basins beneath Coyote Spring Valley reach maximum depths of greater than one km (3,300 feet). The deepest parts of both basins are separated by a NNW-trending, shallowly buried, bedrock ridge that is the northward continuation of the Arrow Canyon Range (Phelps et al. 2000).

The majority of the project area is underlain by Quaternary (younger than two million years) alluvium and Tertiary (younger than 65 million years) sedimentary rock (USGS 1993). These units dominate the alluvial fans. The Quaternary materials make up portions of the alluvial fans and the desert dry wash channel deposits. The alluvial fan deposits are primarily fanglomerates derived from erosion of adjacent mountains. Fanglomerates are sedimentary rock of heterogeneous materials that were originally deposited in an alluvial fan and have since been naturally cemented. These deposits are crudely stratified, parallel to the fan surface, and commonly deeply dissected in places where deposits are strongly cemented (USGS 1993). The Quaternary materials in the Pahranagat Wash incised ephemeral channel and the lower portion of the tributaries are primarily unconsolidated desert dry wash channel and fan deposits of clay to cobble-size, poorly sorted and generally undissected detrital materials in the active drainage channel. Near the Lincoln and Clark County line, Quaternary dune deposits, derived from the Pahranagat Wash incised ephemeral channel, occur adjacent to the wash.

Tertiary (between 65 and two million years old) lakebed deposits, composed of the Muddy Creek Formation, Panaca Formation, and other lakebed deposits in White River Valley lie immediately adjacent to the washes. The Muddy Creek Formation covers a large area in the southeastern corner of Lincoln County and in the northeastern corner of Clark County, with smaller outcrops occurring at the mouth of Meadow Valley Wash and west of U.S. Highway 93 along Coyote Spring Valley (Tschanz and Pampeyan 1970). Rocks of the Panaca and Muddy Creek Formations largely consist of siltstone and clay shale and are not the lacustrine limestone of the Miocene Age (Tschanz and Pampeyan 1970).

Tertiary volcanic rock outcrops are found in the northern part of the valley. Paleozoic carbonate rocks are found in the Arrow Canyon, Sheep and Las Vegas ranges, along the western side of the Meadow Valley Mountains, and probably underlie the Muddy Creek Formation at depth under the valley floor area. These

rocks comprise a thick sequence of limestone, dolomites, and quartzite that include (in descending order), the Birdspring Formation, Monte Cristo Limestone, Sultan Limestone, Lone Mountain Dolomite, Ely Springs Dolomite, Eureka Quartzite, Pogonip Group, middle and lower Cambrian Limestones and Dolomites, and the Chisolm and Pioche Shale (DOE 1996).

The smallest geologic unit is Mississippian (between 360 and 320 million years old) limestone. This unit occurs near the Lincoln and Clark County line. It includes the Joana, Mercury, and Bristol Pass limestones. This is a massive limestone unit and generally forms cliffs. This area is frequently referred to as the badlands, although this can be confusing as one of the soil units in the Coyote Springs Investment Conservation Lands in Clark County is called badlands and is not associated with the limestone outcrops (Tschanz and Pampeyan 1970).

An east-west trending lineament[9] runs through the Muddy Springs area and may be related to the Pahranagat Shear System and a northeast-southwest trending lineament extending from the northeast through Kane Spring Valley.

Range front faults on the west flanks of the southern Delamar Mountains, Meadow Valley Mountains, and Arrow Canyon Range were important in the development of Coyote Spring Valley (Page et al. 2006). These fault systems, in general, consist of a series of steep, west-dipping normal faults that down-drop Paleozoic strata westward in a step-like pattern (Page 1998; Page et al. 1990; Page and Pampeyan 1996, as cited by Page et al. 2006). Displacement on individual faults is generally less than one km (0.6 miles), and cumulative displacements may be as much as two km (1.25 miles) (Page 1998; Page et al. 1990). Interpretation of gravity data indicates that Cenozoic basin-fill deposits probably reach a maximum thickness of approximately one to 1.5 km (0.6 to one mile) in Coyote Spring Valley (Phelps et al. 2000, as cited by Page et al. 2006).

4.5.2 Soils

Three soil surveys describe the project area: one for Lincoln County (NRCS 2000) and one for the Virgin River Area, with an update issued in 2005 (NRCS 2005). Soil associations found during a 2006 investigation for waters of the U.S. (The Huffman-Broadway Group and RCI 2006) are also described. The soils within the Coyote Spring Valley are desert soils (Entisols and Aridisols). Within the project area, 12 soil associations were found: Arizo very gravelly loamy sand, Colorock-Tonopah Association, Badland, Tonopah gravelly sandy loam, Rock land-St. Thomas, Arizo-Bluepoint, Weiser-Tencee-Arizo, Tencee-Weiser, Weiser-Tencee, Kurstan-Tencee, Arizo, and Kurstan-Knob Hill associations. Locations of soil associations are depicted on Figure 4-10.

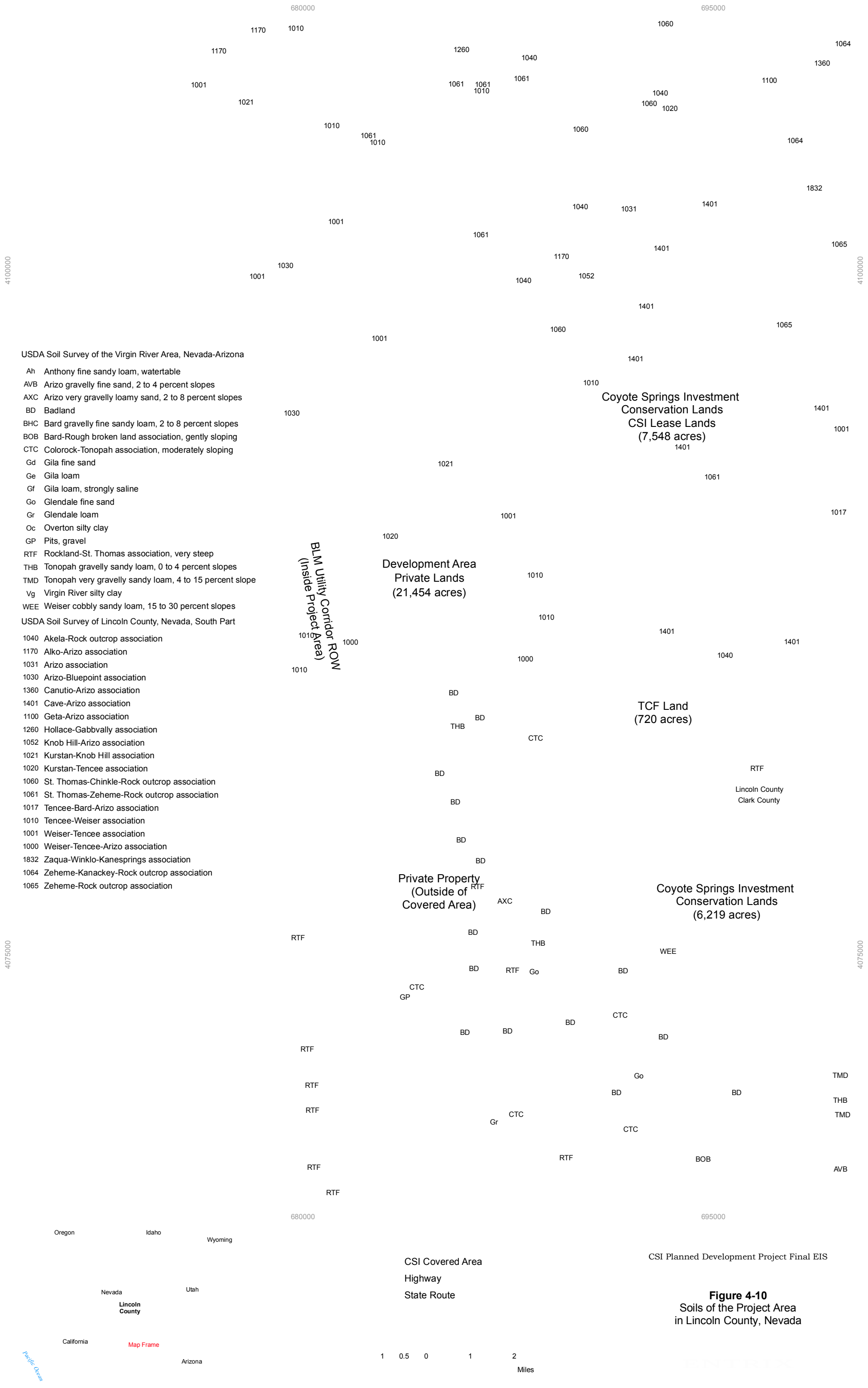
4.5.2.1 Soils Associated with Land West of Pahranagat Wash

The land and desert dry wash channels west of Pahranagat Wash incised ephemeral channel consist of Weiser-Tencee-Arizo association, with smaller units of Tencee-Weiser association in the upper slopes, west of U.S. Highway 93, and Colorock-Tonopah association. Badland soils are found in the lower portion of the Development Area and into Clark County to the south.

The Weiser-Tencee-Arizo association consists of Weiser very gravelly sandy loam, two to four percent slopes; Tencee very gravelly sandy loam, two to four percent slopes; and Arizo very gravelly loamy sand, two to four percent slopes. The Weiser-Tencee-Arizo association is a deep, excessively drained soil that is derived from limestone, dolomite, and mixed rocks. The surface is commonly covered over five percent with cobbles and over 50 percent with pebbles (Huffman-Broadway Group and RCI 2006). Infiltration of water into these soils is slow, and the hazard of water erosion is slight (NRCS 2000, as cited in The Huffman-Broadway Group, Inc. and RCI 2006).

Major components of the Tencee-Weiser association are Tencee very cobbly sandy loam, two to eight percent slopes and Weiser very cobbly sandy loam, two to eight percent slopes. This association is shallow, occurring over petrocalic well drained soils that formed in alluvium from mixed rock. Runoff from these soils is very rapid, although the hazard of water erosion is low (NRCS 2000, as cited in Huffman-Broadway Group and RCI 2006).

[9] A lineament is a topographic feature resulting from a zone of faulting, often providing indications of groundwater resources.



CSI Planned Development Project Final EIS

Figure 4-10
Soils of the Project Area
in Lincoln County, Nevada

The Weiser series consists of very deep, well-drained soils that formed in alluvium from limestone and dolomite and are on fan remnants (NRCS 2000). The upper six inches is pale brown, very gravelly sandy loam, underlain by pale brown extremely gravelly sandy loam to a depth of 60 inches. Elevations generally range from 2,500 to 3,500 feet. The Tencee series formed in alluvium from mixed rocks and consists of shallow, over a petrocalcic, well-drained soils and are on fan remnants (NRCS 2000). The upper 3-inch surface layer is light brownish gray, very cobbly sandy loam. From three to 11 inches deep, the very gravelly sandy loam is pink in color and at approximately 11 inches, is a white, indurated, petrocalcic horizon. Elevations range from 2,800 to 3,800 feet. The Arizo series consists of very deep, excessively drained soils that formed in alluvium from mixed rocks and are on drainageways and channel terraces (NRCS 2000, as cited in The Huffman-Broadway Group, Inc. and RCI 2006). The surface layer (1-inch deep) is light brownish gray, very cobbly loamy sand, pale brown, extremely gravelly loamy sand to 14 inches deep, pale brown, cobbly, loamy sand to 22 inches deep, and light yellowish brown, extremely gravelly coarse sand down to 60 inches deep. Elevations range from 2,500 to 3,500 feet.

The Colorock-Tonopah association consists of Colorock very gravelly loam, two to eight percent slopes and Tonopah very gravelly sandy loam, two to eight percent slopes (NRCS 1980, as cited in The Huffman-Broadway Group, Inc. and RCI 2006). The Colorock soil is on alluvial fans formed from mixed rock sources, and the Tonopah soil is on alluvial fans and terraces. The Colorock soil is shallow and well drained. The surface layer is pink, very gravelly loam about three inches thick, and the subsoil is pink very gravelly sandy loam about 12 inches thick over a lime-cemented hardpan about 22 inches thick. Underlying the pan to a depth of 60 inches is light gray, very gravelly sandy loam. Depth to the hardpan ranges from 12 to 20 inches. Permeability is moderately rapid above the hardpan and very slow through the hardpan. Runoff is medium, and the hazard of water erosion is slight. The Tonopah soil is deep and excessively drained. It formed in alluvium derived dominantly from mixed rock sources. Typically, the surface layer is light gray, very gravelly, sandy loam about six inches thick. The underlying material to a depth of 60 inches or more is light brown very gravelly sand. Permeability of the Tonopah soil is very rapid. Runoff is very slow and the hazard of water erosion is slight.

The Badland soil unit, 15 to 50 percent slopes (occasionally up to 100 percent), consists of severely eroded and gullied land. It is mainly on old terrace escarpments. It results from exposures of the Muddy Creek Formation. The Muddy Creek Formation consists of highly stratified sand, silt and clay that contain a large amount of gypsum and calcium carbonate. Runoff is rapid and the hazard of erosion is high.

4.5.2.2 Soils Associated with the Pahranagat Wash

The soils associated with the Pahranagat Wash incised ephemeral channel within the Development Area in Lincoln County are the Arizo-Blueprint association, Arizo very gravelly loamy sand, and Tonopah gravelly sandy loam. Glendale fine sand is found downstream in Clark County within the 6,219 acres considered in the Preferred Alternative.

The Arizo-Bluepoint association consists of Arizo very gravelly loamy sand, zero to four percent slopes; Arizo very cobbly loamy sand, zero to four percent slopes; and Bluepoint loamy fine sand, four to eight percent slopes. The first Arizo series is on channel terraces, is excessively drained, and has a surface layer of very gravelly loamy sand. The surface layer of the second Arizo series is very cobbly loamy sand, is excessively drained, and is on channels. Both series generally occur from 2,500 to 3,800 feet. The Bluepoint series formed in alluvium, derived from mixed rocks, and the soil is found on dunes. This series consists of very deep, somewhat excessively drained soils, with the upper three inches composed of a loamy fine sand, pale brown in color. From three to 42 inches deep, the stratified loamy fine sand is pale brown and becomes very pale brown, stratified loamy fine sand to a depth of 60 inches.

Arizo very gravelly loam sand with two to eight percent slopes is a deep, excessively drained soil on alluvial fans. It forms in mixed very gravelly and sandy alluvium. Elevation of this association generally ranges from 1,400 to 4,000 feet. The surface layer, typically eight inches thick, is typically light brownish gray, very gravelly loamy sand, underlain to 60-inch depth by light brownish gray, very stratified very gravelly sand and very cobbly coarse sand. This soil type is characterized by high permeability, thus infiltration is high, runoff is low, and the hazard of water erosion is slight.

Tonopah gravelly sandy loam, with zero to four percent slopes, is a deep, excessively drained soil on alluvial fans and terraces. It formed in sandy alluvium derived from mixed rock sources. The upper 6-inch surface layer is light brown, gravelly sandy loam, underlain by light brown, very gravelly sand to a depth of 60 inches. Permeability is rapid, runoff is slow, and the hazard of water erosion is slight.

4.5.2.3 Soils Associated with Land East of Pahranagat Wash

The land and desert dry wash channels directly east of Pahranagat Wash incised ephemeral channel within the Development Area consist of Kurstan-Tencee association, Badland, and Tonopah gravelly sandy loam. Soil associations in upslope areas to the east include Kurstan-Knob Hill, Weiser-Tencee, Weiser-Tencee-Arizo, and Tencee-Weiser. The Colorock-Tonopah association is found in the southeastern portion of the private land in Lincoln County and into the 6,219 acres considered in the Preferred Alternative in Clark County to the south. Tonopah gravelly sandy loam is found within the Badland soils in the southern portion of the private land in Lincoln County. The Rock land-St. Thomas association is also found in the southeastern portion of the CSI private land in Lincoln County (NRCS 2000, as cited in The Huffman-Broadway Group, Inc. and RCI 2006).

Major components of the Kurstan-Tencee association are the Kurstan gravelly sandy loam, eight to 15 percent slopes and Tencee very gravelly sandy loam, eight to 15 percent slopes, and alluvium derived from mixed rocks. The Kurstan series consists of very deep, well-drained soils that formed in alluvium from mixed rocks. It occurs on fan remnants at 2,600 to 2,800 feet in elevation (NRCS 2000). The upper two inches is pale brown gravelly sandy loam, underlain with very pale brown, gravelly sandy loam to a depth of 60 inches. The Tencee series forms on fan remnants, but occurs on the upper portion of the slope at 2,600 to 2,800 feet in elevation. The surface layer is very gravelly sandy loam and is well drained.

Badland soils are made of exposures of the Muddy Creek Formation, as described above for soils west of the Pahranagat Wash incised ephemeral channel. To the east of the Badland soils is the Colorock-Tonopah association, comparable with the Weiser-Tencee-Arizo association, but also includes portions of Arizo-Bluepoint association, the alluvial fans that come into the wash. The Colorock occurs in dissected alluvial fans and Tonopah in smooth alluvial fans.

The Weiser-Tencee-Arizo association and Tencee-Weiser association are described above (Soils Associated with Land West of Pahranagat Wash). The Weiser-Tencee association consists of Weiser very gravelly sandy loam, two to eight percent slopes and Tencee very gravelly sandy loam, two to eight percent slopes. The Weiser-Tencee association is a moderately deep soil complex formed in alluvium from limestone, dolomite, and mixed rocks. Both the Weiser series and Tencee series have a very gravelly sandy loam surface layer and well drained soils. The upper horizon, typically five inches thick, is pale brownish gray very gravelly sandy loam, underlain by a massive, strongly alkaline, extremely gravelly, sandy loam with a strong lime component. This second horizon, which ranges from seven to 12 inches in depth, is frequently followed by an indurated petrocalcic horizon. The Weiser series forms on fan remnants at elevations of 2,500 to 3,500 feet, while the Tencee series forms on fan remnants, but occurs on the upper portion of the slope at 2,800 to 3,800 feet. Water infiltration on these soils is slow and the hazard of erosion is slight.

The Kurstan-Knob Hill association includes Kurstan gravelly sandy loam, two to eight percent slopes and Knob Hill loamy sand, two to four percent slopes. The Kurstan series occurs at 2,600 to 3,000 feet in elevation on fan remnants and has a gravelly sandy loam surface layer, with well-drained soils. The Knob Hill series occurs at 2,500 to 3,000 feet in elevation on inset fans and consists of very deep, somewhat excessively drained soils that formed in alluvium from mixed rocks (NRCS 2000). The upper two inches is pale brown, loamy sand, underlain by pale brown, gravelly loamy sand to 22 inches. Below this layer is white stratified loamy sand to 52 inches and becomes light gray stratified very gravelly loamy sand to 60 inches deep.

The Rock land-St. Thomas association is very steep with 15 to 50 percent slopes, and is on foothills and mountainsides. Rock land consists of areas that have exposures of limestone bedrock. In some areas soil material covers the bedrock. The St. Thomas soil is shallow and well drained, forming from limestone residuum. The 2-inch-thick surface layer is very pale brown cobbly loam, underlain by 12 inches of very pale brown very cobbly loam. Unweathered bedrock is at a depth of 12 inches. Permeability of the St. Thomas soil is moderately rapid. Runoff is medium and the hazard of water erosion is moderate. The Rock land-St. Thomas association is found at the foot of the steep Meadow Valley Mountains in the southeastern portion of the Development Area.

4.5.2.4 Soils Associated with the Kane Springs Wash

In the northern portion of the Development Area, the Kane Springs Wash flows into the Pahranagat Wash incised ephemeral channel. The channel of the Kane Springs Wash consists of the Arizo-Bluepoint association near the confluence with the Pahranagat Wash incised ephemeral channel (see *Soils Associated with the Pahranagat Wash*) and the Arizo association in the upper part of the wash (NRCS 2000, as cited in The Huffman-Broadway Group, Inc. and RCI 2006).

The Arizo association is comprised of Arizo very cobbly loamy sand, two to four percent slopes and Arizo very gravelly loamy sand, two to four percent slopes. The first Arizo series forms on channels at an elevation of 2,500 to 3,800 feet. The surface layer is very cobbly loamy sand, with 30 percent cobbles and 25 percent gravels. Soils are excessively drained and formed from alluvium derived from mixed rocks. The second Arizo series forms on channel terraces from 2,500 to 3,800 feet in elevation. The surface layer is very gravelly loamy sand, with three percent cobbles and 45 percent gravel. Soils are also excessively drained and formed from alluvium derived from mixed rocks.

4.5.2.5 Soils Associated with Land Northwest of Kane Springs Wash

The Weiser-Tencee association is found on land and desert dry wash channels north of the wash at the northern boundary of the Development Area. Weiser-Tencee association has already been described.

4.5.2.6 Soils Associated with Land Southeast of Kane Springs Wash

The Kurstan-Tencee and Kurstan-Knob Hill associations are found in the CSI private lands in Lincoln County south of the Kane Springs Wash. The Kurstan-Tencee association consists of Kurstan gravelly sandy loam with eight to 15 percent slopes and Tencee very gravelly sandy loam with eight to 15 percent slopes (NRCS 2000, as cited in The Huffman-Broadway Group, Inc. and RCI 2006).

4.6 ECOLOGICALLY CRITICAL AREAS

The Coyote Springs Investment LLC lands are located near three areas of critical concern on BLM lands: Kane Springs, Coyote Spring Valley, and Mormon Mesa. The following description is summarized from the Record of Decision for Caliente Management Framework Plan Amendment, September 2000 (BLM 2000) and the Las Vegas Field Office Resource Management Plan (BLM 1998).

BLM regulations define an ACEC as an area “within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.” Only BLM lands are included within ACECs. These areas are managed differently than other special management designations, such as wilderness study areas, as the designation does not automatically prohibit or restrict other uses in the area (with the exception that a mining plan of operation is required for any proposed mining activity within a designated ACEC). In order for an area to be designated as an ACEC, special management beyond standard provisions established by the plan must be required to protect the relevant and important values.

The Kane Springs ACEC is located in southwestern Lincoln County, northwest of the Mormon Mesa ACEC. The ACEC extends north along U.S. Highway 93 towards Alamo from the Lincoln/Clark County border. The Mormon Mesa ACEC is located in south central Lincoln County southeast of the Kane Springs ACEC. The ACEC extends north from the Lincoln/Clark County line and the cities of Mesquite and Moapa, Nevada, near the Mormon Mountain Range. The Coyote Spring Valley ACEC is located to the southwest of the Mormon Mesa ACEC in Clark County and is managed by the Las Vegas Field Office (BLM 1998). Figure 4-1 shows the location of the project area in relation to these ACECs.

These ACECs offer several relevant and important features and encompass important desert tortoise and desert wildlife habitats in Lincoln and Clark counties. The Mormon Mesa ACEC contains riparian habitats along the Lower Meadow Valley Wash for several sensitive or listed Mojave species including the federally threatened southwestern willow flycatcher and federal candidate yellow-billed cuckoo (BLM 2005).

The current condition, state, and trend of the relevant and important values of these ACECs are byproducts of historic human uses, present human uses, and unnatural and reoccurring fire regimes. The area is composed of a mixture of Mojave vegetative communities, including northern and southern desert shrub and annual grasslands. In some areas, the native shrub, cactus, yucca, and Joshua tree composition has been replaced with non-native red brome and native annual grasses due to increased fire frequency and intensity. Previous grazing use by domestic cattle and sheep and wild horses and burros have additionally altered the vegetative state and composition of the Mojave habitats within the ACECs. Development in adjoining non-ACEC designated areas is increasing near the communities of Las Vegas, Mesquite, Moapa, and Alamo. The ACECs also are receiving tremendous increases in recreational utilization and off-highway vehicle use due to the ever-increasing demand placed on these resources from the growing populations of the greater Las Vegas area. Desert tortoise populations in the Northeastern Mojave Recovery Unit remain relatively low, but mostly stable (BLM 2005).

The current threats and risks to the wildlife and critical Mojave Desert wildlife habitats of Kane Springs, Mormon Mesa, and Coyote Spring Valley ACECs include: conversion of Mojave shrub habitats to annual grassland from altered fire regimes, habitat fragmentation from past development/actions within ACECs and current development and habitat loss adjacent to ACECs, direct mortality and indirect alteration of habitat from vehicles and off-highway vehicle use, and increased predation rates due to habitat fragmentation and increased predator abundance and distribution from human activity and actions (BLM 2005).

4.7 WILDERNESS AREAS

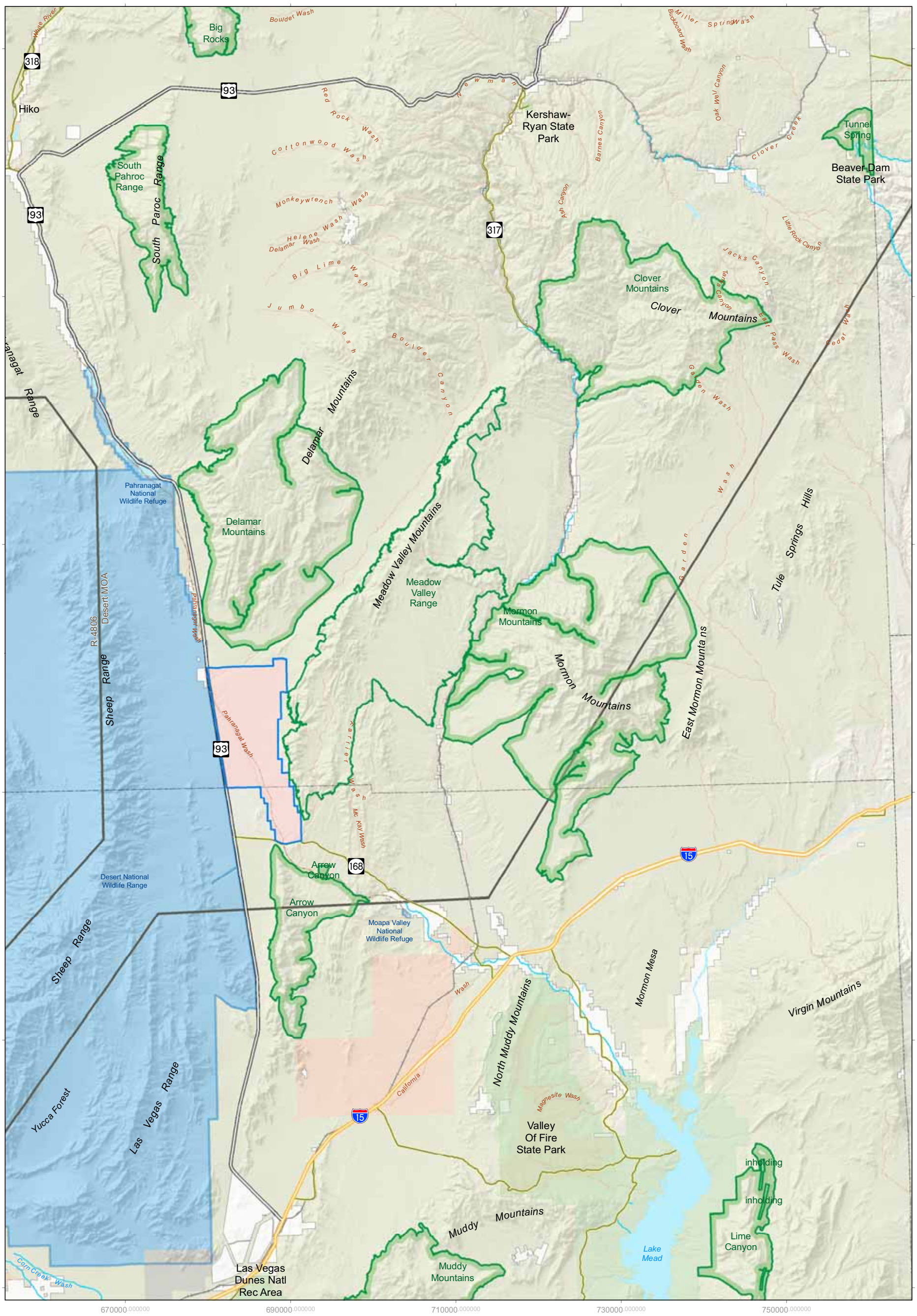
The 1964 Wilderness Act defines wilderness and wilderness values as follows:

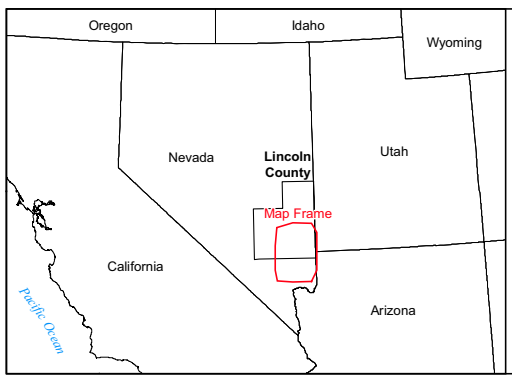
> *"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."*

The Coyote Springs Investment LLC lands are located near four wilderness areas (Figure 4-11).

To the east and north of the project area lie three adjacent or nearby wilderness areas managed by the BLM's Ely Field Office (Figure 4-11): Delamar Mountains (111,328 acres), Meadow Valley Range (123,488 acres), and Mormon Mountains (157,938 acres) (BLM 2008). The Meadow Valley Range Wilderness is adjacent to the eastern edge of the project area and the Delamar Mountains Wilderness is approximately two kilometers north of the project area. The Mormon Mountains Wilderness lies approximately 19 kilometers east of the project area, on the eastern side of the Meadow Valley Range Wilderness. These wilderness areas were recently established under the Lincoln County Conservation, Recreation, and Development Act of 2004.

The Arrow Canyon Wilderness (27,530 acres) lies approximately 0.5 kilometers to the south of the project area and is managed by the Las Vegas Field Office (BLM 2008). This wilderness area was recently established under the Clark County Conservation of Public Land and Natural Resources Act of 2002 Public Law 107-282 (BLM 2008).





Coyote Springs Covered Area

Land Ownership
- Private
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Fish and Wildlife Service
- State Lands

Wilderness Areas

Military Airspace
- Desert MOA
- R-4806

Stream
Desert Dry Wash
Ephemeral Channel

Interstate
Highway
State Route

3 1.5 0 3 6 Miles

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Figure 4-11
Wilderness Areas near the Project Area

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4.8 VISUAL RESOURCES

Lincoln County is a rural county with less than 4,200 residents. Because more than 98 percent of all lands are federally owned, development is limited to small pockets. Caliente and Alamo are the largest population centers, at less than 2,000 people each. The landscape is predominantly desert scrub with mesa-type mountains and large, open valleys. Mesquite-catclaw forests occur in pockets, and rock outcrops along mountain edges can create visual variety in the desert landscape. Terminal lakes and reservoirs occasionally dot the landscape, with willow and other riparian vegetation occurring in association.

A few main highways provide viewing access to Lincoln County's landscape. U.S. Highway 93 heads north from the Clark County line and follows along the edge of the Desert National Wildlife Range and Pahranagat Wash incised ephemeral channel, next to the Delmar Mountains. A main east-west route (Hwys 375, 93, and 319) heads through typical basin and range country, with only a couple of settlements and towns, including Caliente, which occurs next to Meadow Valley Wash. U.S. Highway 93 continues north from Caliente through Lake Valley and alongside the Wilson Creek Range, until White Pine County is reached.

The CSI lands are located adjacent to U.S. Highway 93 in the southern portion of Lincoln County. This area is generally undeveloped. The Meadow Valley Mountains rise in a north-south ridge to the east of the area, while the CSI lands are in the gently sloping Coyote Spring Valley. To the west lie other, smaller north-south mountain ranges.

The land is currently a Planned Unit Development (PUD) as described under Lincoln County Comprehensive Planning Development Code (Lincoln County 2004). PUDs allow flexibility through area-sensitive site planning and design and require development and design standards.

The project area is adjacent to land managed by the BLM (see Figure 4-1). The BLM has a Visual Resource Management (VRM) system, which is used for evaluating public lands and projects on public lands administered by the BLM. The VRM classes for the land surrounding the project area are Class II (most valued) and Class III (moderate value). The Class II land, near Arrow Canyon, directs management to retain the landscapes' existing character. The remainder of the area is Class III, which directs management for partial retention of the existing character of the landscape.

Public sensitivity to the aesthetic resources in the area is moderate, as no one lives or works adjacent to these lands, but people do pass by it while driving. People who might view the project area include persons driving on U.S. Highway 93 between Lincoln and Clark counties. Approximately 1,500 vehicles per day travel along U.S. Highway 93 (NDOT 2005). Persons who may be recreating in the vicinity could also view the area.

4.9 AIR QUALITY

Air quality in a given location is described as the concentration of various pollutants in the atmosphere. Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. This section describes existing air quality conditions. Topics discussed include climatology, meteorology, and local air quality of the project area.

4.9.1 Climatology and Meteorology

CSI lands are located in the southwestern desert region of Nevada. Southern Nevada's climate is dry throughout the year, with long, hot summers and short, mild winters. Maximum daily temperatures in the summer typically exceed 100°F, with lows in the 70s.

The number of days with inclemental weather varies from year to year. This climate is controlled primarily by Nevada's rugged and varied topography. The prevailing westerly winds move warm, moist Pacific air over the western slopes of the Sierra Nevada Range where the air cools. Condensation takes place and most of the moisture falls as precipitation. As the air descends the eastern slopes, compressional warming occurs and little precipitation falls. The result is that the lowlands of Nevada are largely desert landscapes.

Precipitation in and around the area is spread fairly uniformly throughout the year with maximum precipitation occurring in January and July. The mean total annual precipitation in the vicinity of the project area is

approximately five to 6.5 inches; however, annual precipitation can vary greatly from year to year, ranging from two to 13 inches.

Winters are mild in this region. Afternoon temperatures average near 60ºF, and skies are mostly clear. Pacific storms occasionally produce rainfall in the southern Nevada desert, but in general, the Sierra Nevada Mountains of eastern California act as effective barriers to moisture (BLM 2007a).

During the winter, precipitation is primarily associated with storms moving eastward from the Pacific Ocean. Surface evaporation rates run counter to local precipitation amounts and are relatively high. Snow accumulation is rare in the lower desert region. Flurries are observed once or twice during most winters, but snowfall of one inch or more occurs only once every four to five years. Freezing temperatures do occur with some regularity (BLM 2007a).

During the summer, precipitation is associated with storms that move south-southwest from the Gulf of Mexico and the Pacific Ocean. A couple of weeks during the summer, warm moist air predominates within the area and causes scattered, occasionally severe thunderstorms. Snow rarely falls in the area. The climate in the area is dry and hot in the summer and cool in the winter. Temperatures throughout the year can range from average daily maximums in July of 104°F to average daily minimums in January of 33°F. The summer heat is accompanied by extremely low relative humidity.

Strong winds can occur during the spring and fall seasons. Winds stronger than 50 miles per hour (mph) are infrequent but can occur with some of the more vigorous storms. Winter and spring wind events often generate widespread areas of blowing dust and sand. Strong wind episodes in the summertime are usually connected with thunderstorms, and are thus more isolated and localized. Prevailing wind direction is typically southwesterly, unless associated with a thunderstorm outflow. Surface winds are characterized by prevailing southwesterly winds with an average speed of approximately 10 mph.

4.9.2 Local Air Quality

The project area is located within the Coyote Spring Valley Airshed 210 shown on Figure 4-12. Naming of airsheds in Nevada corresponds to the state's groundwater basins (e.g., Coyote Spring Valley Airshed 210 corresponds to the Coyote Spring Valley Hydrographic Basin 210 in the Colorado River Hydrographic Region of Nevada). The Coyote Spring Valley Airshed is bordered to the northeast by the Kane Springs Valley Airshed 206 (in the Central Hydrographic Region) and bordered to the east by the Muddy River Springs Area (Upper Moapa Valley) Airshed 219 (in the Colorado River Hydrographic Region). Each of these airsheds is designated unclassifiable/attainment for all criteria pollutants with respect to the National Ambient Air Quality Standards (NAAQS).

Because the Coyote Spring Valley is largely undeveloped, there are few emission sources in the area. Typical sources include silica sand mining operations in the north-central part of the airshed, on-road and off-road vehicle and aircraft traffic, and fugitive dust. Given the rural landscape and mining history of Lincoln County, it is likely that a potential source of air quality concerns could be the tailings associated with abandoned mines. While no air quality measurements exist for Lincoln County, similar sites in Nevada show no exceedance of particulate matter. Therefore, it is unlikely that air quality in Lincoln County is currently in exceedance of particulate matter, or other contaminants, given its rural nature with limited industry. Because there are no significant sources of pollutant emissions in the region, the air quality is good.

No air quality monitoring by the State of Nevada or the EPA has occurred in Lincoln County. Because there are insufficient data available to determine status, the project area is listed as unclassified/attainment with respect to state and federal air pollutants criteria. However, the Nevada Bureau of Air Quality Planning (NBAQP) has monitored other sites in Nevada for particulate matter less than 10 microns (PM_{10}) and other air pollutants (NBAQP 2003). Two sites in Nevada that are not located near large population centers were identified and PM_{10} data (in micrograms per cubic meter [$\mu g/m^3$]) from these sites is presented in Table 4-9. None of the sites exceeded state or federal air quality standards. Lehman Caves is located in Great Basin National Park and has some of the cleanest air in Nevada. It is likely that remote sites of Lincoln County are similar to these measurements. Battle Mountain, Nevada (population 2,870) has a mixture of residential and commercial uses. The measurements from two sites within this city were near commercial and residential development (Police/Fire Station) and near residential development and Interstate-80 (Junior High School).

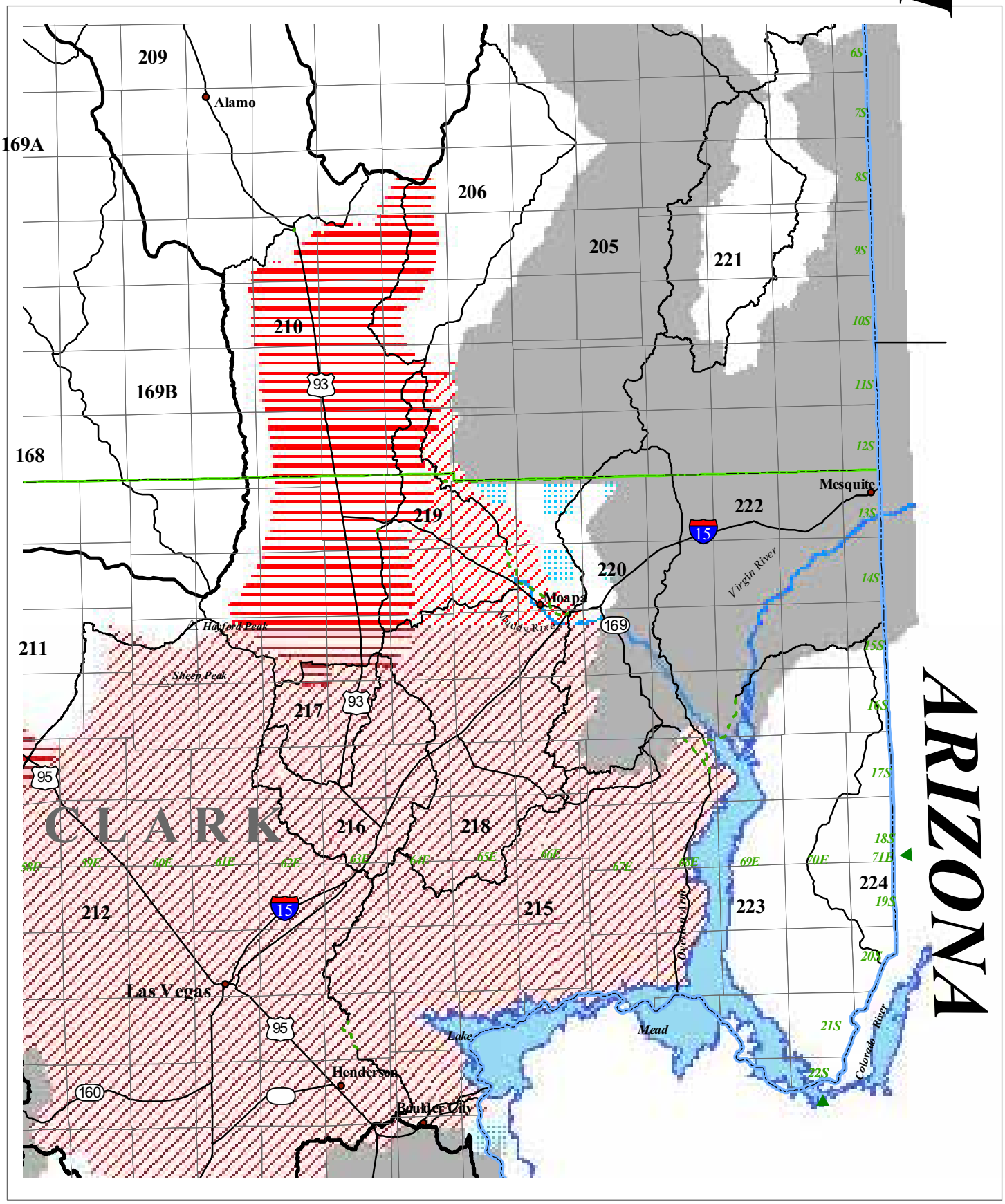

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Figure 4-12

Location of Coyote Spring Valley Airshed
Lincoln County, Nevada

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Table 4-9 Annual Standard (Mean) of Particular Matter (PM_{10}) in μg/M³ for Four Sites in Rural Nevada

Year	Battle Mountain Junior High School	Battle Mountain Police/Fire Station	Lehman Caves	Lehman Caves, IMPROVE Site
1992	-	31	-	-
1993	-	34	11	-
1994	-	33	8	-
1995	-	34	6	8
1996	-	37	-	9
1997	-	32	-	6
1998	18	30	-	-
1999	24	-	-	-
2000	22	-	-	-
2001	25	-	-	-
2002	23	-	-	-
Source: NBAQP				

The nearest area in violation of the state and federal air pollutant criteria is the Las Vegas area, located southwest of the project area. The Las Vegas Valley Hydrographic Area 212, located in Clark County, is classified as moderate nonattainment for carbon monoxide and serious nonattainment for fugitive dust (PM_{10}). The remaining portion of Clark County is designated as unclassifiable/attainment for these pollutants (40 CFR Part 81.329). Monitoring data from the nearest stations (Apex and Mesquite) south of the project area are shown in Table 4-10 for comparison with NDEP and national air quality standards.

Table 4-10 Air Quality Monitoring Data Near the Project Area and NDEP and National Air Quality Standards

Pollutant	Averaging Time	Apex 2004 Data	Mesquite 2004 Data	Nevada Standards[a]	National Standards[b]	
				Concentration	Primary[c,d]	Secondary[c,e]
Ozone	8 hours	0.0819 ppm[1]	0.0724 ppm	0.08 ppm	0.08 ppm	Same as primary
Carbon monoxide less than 5,000 ft above mean sea level	8 hours	NM	NM	10,000 g/m³ (9.0 ppm)	10,000 g/m³ (9.0 ppm)	None
At or greater than 5,000 ft above mean sea level		n/a	n/a	6,870 g/m³ (6.0 ppm)		
Carbon monoxide at any elevation	1 hour	NM	NM	40,000 g/m³ (35 ppm)	40,000 g/m³ (35 ppm)	
Nitrogen dioxide	Annual arithmetic mean	NM	NM	100 μg/m³ (0.053 ppm)	100 μg/m³ (0.053 ppm)	Same as primary
Sulfur dioxide	Annual arithmetic mean	NM	NM	80 g/m³ (0.03 ppm)	80 g/m³ (0.03 ppm)	Same as primary
	24 hours	NM	NM	365 g/m³ (0.14 ppm)	365 g/m³ (0.14 ppm)	
	3 hours	NM	NM	1,300 μg/m³ (0.5 ppm)	None	1,300 μg/m³ (0.5 ppm)
(Suspended) particulate matter as PM_{10}	24 hours	150 (85)[2] μg/m³	134 (130)[2] μg/m³	150 μg/m³	150 μg/m³	Same as primary

Table 4-10 Air Quality Monitoring Data Near the Project Area and NDEP and National Air Quality Standards

Pollutant	Averaging Time	Apex 2004 Data	Mesquite 2004 Data	Nevada Standards[a]	National Standards[b]	
				Concentration	Primary[c,d]	Secondary[c,e]
(Suspended) particulate matter as $PM_{2.5}$	24 hours	NM	NM	----	35 µg/m^3	Same as primary
Lead	Quarterly arithmetic mean	NM	NM	1.5 µg/m^3	1.5 µg/m^3	Same as primary
Visibility [h]	Observation	NM	NM	In sufficient amount to reduce the prevailing visibility to less than 30 mi when humidity is less than 70 percent	There is no national standard for visibility	There is no national standard for visibility
Hydrogen sulfide[i]	1 hour	NM	NM	112 g/m^3 (0.08 ppm)	There is no national standard for visibility	There is no national standard for visibility

NOTE: All values are corrected to reference conditions.

[a] These standards must not be exceeded in areas where the general public has access

[b] These standards, other than for ozone, PM_{10} and $PM_{2.5}$ and those based on annual averages, must not be exceeded more than once per year . To attain the ozone standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. PM_{10} must not to be exceeded more than once per year on average over three years.. To attain the $PM_{2.5}$ standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3. To attain the 24 hour PM_{10} standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

[c] Concentration is expressed first in units in which it was adopted and is based on a reference temperature of 25 °C and a reference pressure of 760 mm of mercury. All measurements of air quality must be corrected to a reference temperature of 25 °C and a reference pressure of 760 mm of mercury (1,013.2 millibars); parts per million (ppm) in this table refers to ppm by volume or micromoles of pollutant per mole of gas

[d] National primary standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health

[e] National secondary standards are the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant

[f] Micrograms per cubic meter

[g] Parts per million by volume or micromoles per mole of gas

[h] For the purposes of this section, prevailing visibility means the greatest visibility that is attained or surpassed around at least half the horizon circle, but not necessarily in continuous sectors

[I] The ambient air quality standard for hydrogen sulfide does not include naturally occurring background concentrations.

4.9.3 Air Pollutant Impacts upon Human Health

The criteria and other regulated pollutants and their impact upon health and environmental welfare are discussed in the following subsections.

Ozone (O_3). Ozone is a photochemical oxidant and the major component of smog. While ozone in the upper atmosphere is beneficial for shielding the earth from harmful ultraviolet radiation from the sun, high concentrations at ground level cause health problems due to lung irritation. Ozone is generated by a complex series of chemical reactions between reactive organic compounds (ROC) and nitrogen oxides (NO_x) in the presence of ultraviolet light. High ozone levels result from ROC and NO_x emissions from vehicles and industrial sources, in combination with daytime wind flow patterns, mountain barriers, a persistent temperature inversion and intense sunlight. For this reason, ROC and NO_x are considered precursors to ozone and are consequently regulated as ozone.

Nitrogen Dioxide (NO_2). NO_x emissions are primarily generated from the combustion of fuels. NO_x includes nitric oxide (NO) and NO_2. Because NO converts to NO_2 in the atmosphere over time, and NO_2 is more toxic than NO, NO_2 is the listed criteria pollutant. As a gas, it can penetrate deep into the lungs where tissue damage occurs. The control of NO_x is also important because of its role in the formation of ozone.

Carbon Monoxide (CO). CO is a byproduct of incomplete combustion, principally from automobiles and other mobile sources of pollution. CO emissions from wood-burning stoves and fireplaces can also be measurable contributors. The major immediate health effect of CO is that it competes with oxygen in the blood stream and can cause death by asphyxiation. However, concentrations of CO in urban environments are usually only a fraction of those levels where asphyxiation can occur. Peak CO levels typically occur during winter

months due to a combination of higher emission rates and stagnant weather conditions, such as ground-level radiation inversions.

Sulfur Dioxide (SO_2). SO_2 is produced when any sulfur-containing fuel is burned. Health and welfare effects attributed to SO_2 are due to the highly irritating effects of sulfate aerosols, such as sulfuric acid, which are produced from SO_2. Pipeline (regulated) natural gas contains trace amounts of sulfur, while fuel oils contain much larger amounts. SO_2 can increase the occurrence of lung disease and cause breathing problems for asthmatics. It reacts in the atmosphere to form acid rain, which is destructive to lakes and streams, crops and vegetation, as well as to buildings, materials and works of art.

Particulate Matter (PM). Particulates in the air are caused by a combination of wind-blown fugitive or road dust, particles emitted from combustion sources (usually carbon particles), and organic sulfate and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and NO_x. Windblown fugitive dust is the primary source of PM in the Coyote Spring Valley. These can occur from unpaved roads, disturbed areas, and stockpiles during construction activities. Particulate matter may contribute to the development of chronic bronchitis and may be a predisposing factor to acute bacterial and viral bronchitis. Respirable particulate matter is referred to as PM_{10}, because it has a diameter size of equal to or less than 10 microns. Respirable particulate can contribute to increased respiratory disease, lung damage, cancer, premature death, reduced visibility and surface soiling. Fine particulates come from fuel combustion in motor vehicles and industrial sources, residential and agricultural burning, and from the reaction of NO_x, SO_x and organics.

Visibility. Visibility is affected by both particulates and gases. Haze is classified as intense if the visual range for one hour is less than 4.8 miles (7.7 km). Typically, the highest haze levels occur in the late fall and winter during low inversion, stagnant conditions.

Sensitive Receptors. Certain population groups are considered more sensitive to air pollution and odors than others, in particular, children, elderly and acutely ill and chronically ill persons, especially those with cardio-respiratory diseases. Sensitive land uses would include those locations where such individuals are concentrated, such as hospitals, schools, daycare centers, convalescent homes, residences and parks with active recreational uses. There are no human populations within 20 miles of the project area; therefore, there are no sensitive receptors.

4.10 TRANSPORTATION AND CIRCULATION

The circulation system in Lincoln County consists of major highways, collector streets, local streets, and mountain/rural roads (Lincoln County 2006). The nearest major airport to the project area is located in Las Vegas, Nevada (approximately 56 miles southwest of the project area).

4.10.1 Roads

One highway, U.S. Highway 93, runs roughly in a north-south direction through Lincoln County in southern Nevada. U.S. Highway 93 is a two-lane highway that connects with U.S. Hwy 50 and Interstate 80 to the north and Interstate 15 to the south. U.S. Highway 93 is primarily utilized by interstate trucking and freight carriers moving freight between southern Nevada and other western states (Lincoln County 1991). Kane Springs Road, a gravel road maintained by the Lincoln County Road Department, is the only roadway within the Development Area open to the public. There are no other improved or unimproved roadways within the Development Area. The site is currently accessed from U.S. Highway 93 on the west.

Regional access to the project area is from Interstate 15 (I-15) to U.S. Highway 93 or State Route 168 (see Figure 1-1). I-15 is a divided four-lane highway providing access to southern Nevada and connects to California. State Route 168 is a two-lane highway that begins and ends at U.S. Highway 93, making a loop to the southeast and providing access to the Valley of Fire State Park on the western shores of Lake Mead.

Old Hwy 93 traverses the eastern portion of the Coyote Springs Resource Management Conservation Area. This gated road is not open for public vehicle access without permission from the landowner. This road is paved in places, but not maintained, and it crosses several drainages.

U.S. Highway 93 near the Lincoln-Clark County line has a history of being temporarily closed due to flooding and sediment deposition during large rainfall events. Precipitation in the Sheep Range west of the

Development Area flows eastward and is intersected by a ditch paralleling U.S. Highway 93. Storm flows travel along this ditch and cross through culverts under U.S. Highway 93. Occasionally, some culverts may become clogged and sediment-laden water flows over the roadway, at times depositing enough sediment on the road surface to make the road impassible by passenger cars.

NDOT adopted a minimum LOS for U.S. Highway 93 of C, with a maximum service flow rate of 1,900 passenger cars per hour per lane (pc/h/ln). The corresponding adopted LOS for State Route 168 is LOS D, with a maximum service flow rate of 1,550 pc/h/ln (Carter Burgess 2006).

4.10.2 Public Transportation

Lincoln County Transportation is a publicly-funded senior citizen transit service that provides service to Las Vegas, northward to Ely, and throughout communities in Lincoln County (Lincoln County 2006, Lincoln County 1991).

4.10.3 Airports

In Lincoln County, there are two airports, one in Panaca and another in Alamo. The Panaca airport runway is approximately 5,000 feet in length and is paved and lighted. The Alamo airport is a dirt strip approximately one mile in length. The U.S. Air Force occasionally uses this air strip as a training facility for C-130s and as a emergency landing strip. No charter or commercial services are available at either airport (Lincoln County 1991).

4.10.4 Railroads

Union Pacific operates railroad lines that run north-south along Meadow Valley Wash, towards Las Vegas, and also east-west along Clover Creek, towards Salt Lake City. These railroad tracks are for commercial use only. No passenger or freight service is available (Lincoln County 2006).

4.11 NOISE

Noise is generally defined as unwanted or intrusive sound. Sound can be perceived as noise because of loudness, pitch, duration, occurrence at unwanted times or from an unwanted source, or because it interrupts or interferes with a desired activity. A sound that is considered neutral or desirable by one person may be considered unpleasant noise by another person, because of a perception of inappropriateness or disturbance or unwanted content or meaning. Noise can adversely affect natural soundscape, wildlife, and human populations. It can directly impact them by modifying or intruding upon the natural soundscape, masking the natural sounds that are an intrinsic part of the environment. Noise may vary in character from day to night and from season to season. To characterize a particular noise, the following variables are used: magnitude, frequency and duration.

The magnitude of variations in air pressure associated with sound waves results in the quality commonly referred to as loudness. Customarily, sound magnitude is expressed in decibels (dB) which are logarithmic (power of 10) ratios comparing measured sound pressures to a reference pressure. An increase of 10 dB equals a doubling of the noise level. Thus, a noise of 70 dB is approximately twice as loud as 60 dB and four times as loud as 50 dB.

A second characteristic of sound that must be included in the measurement of noise is frequency. Frequency refers to the number of times per second the object producing the sound vibrates. The unit of measurement of frequency is Hertz (Hz) (defined as one vibration per second).

The human ear responds to sounds with frequencies in the range of 20 to 20,000 Hz. Frequencies above or below this range are inaudible to humans and are referred to as ultrasound and infrasound, respectively. Within the audible range, subjective response to noise varies. People generally find higher pitched sounds to be more annoying than lower pitched sounds. Most of the sounds we hear in the environment do not consist of a single frequency but rather a broad band of frequencies with each differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies that comprise a sound in accordance with A-weighting that reflects the fact that human hearing is less sensitive at low frequencies and

extreme high frequencies than in the frequency mid-range. This is called A-weighting, and the decibel level so measured is called A-weighting sound level (dBA).

The third characteristic of noise that must be accounted for to describe human noise response is duration. Noise induced hearing loss, for example, is directly related to magnitude, frequency content and duration of noise exposure. Annoyance due to environmental noise is also associated with how often noise is present and how long noise persists.

A noise survey has not been conducted for the project area. Except for localized areas, the baseline soundscape on CSI lands is likely to be only natural sounds. Noise sources are located along roads, railroads tracks, and trails and include: construction equipment, road vehicles, OHV, planes, and railcars. Due to the undeveloped nature of the land, it is expected that traffic noise from U.S. Highway 93 and aircraft noise from frequent military overflight would be the most frequent contributor of noise to the project area.

The USAF operates Nellis Air Force Base (AFB), located approximately 40 miles south of the project area. Nellis AFB is a member of the United States Air Force's Air Combat Command. It boasts the largest and most demanding advanced air combat training in the world (Global Security.org 2005). As mentioned in Section 4.1.1: Land Management in Lincoln County, the Desert Military Operations Area of Nellis AFB has a flyover zone directly over the entire project area, where training operations can occur (USAF 2007). In order to reduce noise levels for residents living in a development constructed in the mid-1980s, the Air Force voluntarily restricted live-ordinance flights to the north of the base. In 2003, F-22 fighters were added to Nellis AFB, and in order to further reduce noise impacts to the surrounding area, virtually all takeoffs were scheduled between 10:30 p.m. and 6:30 a.m. (USAF 2002). Typical aircraft exercising launch and recovery missions fly to the northeast, toward the project area of the proposed project (refer to the Nellis Air Force Base website, http://www.nellis.af.mil/). Combat flight training will continue over the project area.

4.11.1 Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hospitals, schools, guest lodging and libraries are most sensitive to noise intrusion and, therefore, have more stringent noise exposure targets than manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. There are currently no human sensitive receptors in the project area. The nearest residents are most likely those in the vicinity of Moapa, Nevada, approximately 20 miles to the southeast of the project area.

4.12 LAND USE, PLANNING, AND ZONING

There is one local planning body that applies to the CSI lands in Lincoln County; the Lincoln County Planning Commission. The Lincoln County Planning Commission's jurisdiction is for all land outside of the City of Caliente, which is incorporated. It has enacted zoning ordinances and has completed a master plan, which was updated in fall 2006. The planning commission is comprised of six members, and there are three staff persons in the planning department at Lincoln County. The Lincoln County planning department reports to the planning commission.

CSI and Lincoln County have signed a development agreement regarding the specifics of the development activities that could occur on CSI lands within Lincoln County. Lincoln County has also created a Development Code with ordinances specific to the CSI lands in Lincoln County.

4.12.1 Coyote Springs Investment PUD Code

With the development agreement, the CSI lands in Lincoln County are considered a PUD. The associated development code lays out general information about the zone, as well as minimum development and design standards, identification of a planned village development district, and inclusion of approval procedure for this PUD. Under this development agreement, all development within the PUD must be in compliance with Lincoln County code.

Within the PUD, a Planned Village District Zone Land Use Plan proposes a series of villages featuring mixed uses and a range of unit types, lot sizes, densities, and amenities. This plan provides a general plan for

residential and non-residential uses, allowing for flexibility for detailed planning and design at a later date. A series of land use zones will be allowed within the PUD district, allowing low density rural areas up to multiple family residential and non-residential. Non residential zones can include office, business, commercial, manufacturing, industrial, recreational, open space, resort, mixed use, and public facility zoning.

Minimum development standards include provisions for types of residential units, development density, residential and commercial development standards, public and private streets, setbacks, fire lanes, private gated communities, storm drainage, potable water, fire hydrants, sanitary sewer, treated effluent, electric and natural gas, and telephone lines. Additional requirements are laid out for common open space areas and hillside developments.

Minimum design standards include design aspects of the villages, general architecture, landscape, fences, walls, and buffering, signs, and exterior lighting.

4.13 RECREATION RESOURCES

The CSI lands are located in an undeveloped section of Lincoln County and are adjacent to BLM and USFWS lands.

The USFWS lands to the west of U.S. Highway 93 are the Desert National Wildlife Range, which provides opportunities for camping, hiking, backpacking, horseback riding, and bird watching. Limited hunting for bighorn sheep is also allowed. Mormon Well Road provides access into the refuge from U.S. Highway 93 (USFWS No date).

Directly adjacent BLM lands are two areas of critical concern (ACEC): Kane Springs, and Mormon Mesa, while Coyote Spring ACEC is nearby. These ACECs allow all non-consumptive recreation use (e.g., camping, hiking, backpacking, casual horseback riding, and bird-watching). Casual (non-organized) OHV use is limited to roads and vehicle trails designated for OHV use. These areas are closed to speed competitive OHV use and are closed to organized OHV events from March 15 to June 15 and from August 31 to October 15 (BLM 2000).

Other nearby BLM lands include the Meadow Valley Range Wilderness to the east and the Arrow Canyon Wilderness to the south. These areas offer wilderness recreational experiences and are closed to mechanized and motorized vehicles. Hunting, fishing, and trapping are allowed according to state of Nevada regulations (BLM No date). The Meadow Valley Range Wilderness can be accessed by the road leading up to Kane Springs Wash on the northeastern corner of the CSI lands. The Arrow Canyon Wilderness is accessible from State Route 168 to the south of the CSI lands.

Within a 65 mile radius of the project area, there are numerous opportunities for public recreational use. Within this radius are county and city parks for Las Vegas, Clark County, and Lincoln County; state and federal lands in White Pine, Lincoln, Clark, and Nye counties in Nevada and Washington County in Utah and Mohave County in Arizona. These include lands managed by BLM's Ely, Las Vegas, and Arizona Strip Field Offices; USFS' Humboldt-Toiyabe and Dixie National Forests; USFWS' Desert National Wildlife Range, Moapa Valley NWR, and Pahranagat NWR; a few Nevada State Parks and Wildlife Management Areas (e.g., Beaver Dam State Park; and NPS' Lake Mead NRA (USGS GAP 2005). These areas are open to motorized and non-motorized uses, including birdwatching, hiking, fishing, camping, and OHV non-speed and speed uses (in designated areas).

For OHV use, private OHV parks are available in Alamo and North Las Vegas, and OHV use is permitted in some areas of state parks, which occur in both Lincoln and Clark counties (NDSP 2008).

Trails where OHV use is allowed within the 65 mile radius include the Silver State trail, managed by Ely Field Office and accessed from U.S. 93 near Caliente, which is over 240 miles in length; the Chief Mountain trails managed by Ely Field Office in Lincoln County (30 miles in length); Cold Springs OHV area in Humboldt Toiyabe National Forest (unknown miles in length), and the Logandale Trails managed by the Las Vegas Field Office (100 miles in length) (Great Basin Institute 2008). The south access point for the Chief Mountain trails and the Silver State trail is located at Oak Springs Summit on the north side of U.S. Highway 93 about five miles west of Caliente.

In addition, the BLM Las Vegas Field Office (LVFO) offers a number of off-highway vehicle routes. The following is a list of the most popular:

- Rocky Gap Road located in Red Rock Canyon National Conservation Area.
- Big Dune located 15 miles south of Beatty, south of U.S 95.
- Eldorado Valley located five miles southwest of Boulder City.
- Jean/Roach Dry Lake Bed Area located 20 miles south of Las Vegas, east of Jean, Nevada.
- Logandale Trails System located near I-15 north at exit 93 (Overton/Logandale).
- Nelson Hills located approximately 17 miles south of Las Vegas on Highway 95.
- Nellis Dunes just north of Nellis Air Force Base, also known as Nellis Dunes, encompasses approximately 10,000 acres formally designated as an Off-Road Vehicle play area.

4.14 PUBLIC SERVICES AND UTILITIES

In Clark County to the south, two designated BLM utility corridors are reserved for the United States Government, as the result of special legislation. Public Law 101-67, the Apex Legislation, reserved numerous corridors within the area, including existing power-line rights-of-way, ranging from 300 to 1,800 feet in width, for a total length of approximately 32 miles. The Nevada-Florida Land Exchange Authorization Act of 1988 established a corridor in Coyote Spring Valley, with a total length of approximately thirteen miles, in Clark and Lincoln counties. Included in the Nevada-Florida Land Exchange Authorization Act of 1988 was a provision for a federally reserved electrical transmission line right-of-way corridor (Corridor) on 10,735 acres of the fee land in southern Lincoln and northern Clark counties. In 2004, the LCCRDA authorized and directed BLM to relinquish the reserved transmission corridor upon CSI's payment of the fair market value (FMV), and to relocate the corridor to an area adjacent to and west of U.S. Highway 93. Relocation of the transmission corridor in Clark County has been completed (excepting BLM's update of its plats). Relocation of that portion of the transmission corridor encumbering CSI's Lincoln County lands is pending completion of the cadastral survey and payment of FMV when determined.

Three major utility rights-of-way transect Clark County from north to south. None of these rights-of-way are within a designated corridor. Each federal agency is responsible for the permitting of utility rights-of-way across lands under their jurisdiction. Establishment of designated corridors for utility rights-of-way must be identified in the agency's land use plan.

4.14.1 Public Services

There are currently no public services within the project area. The Lincoln County Sheriff's Department provides police protection to the unincorporated portions of Lincoln County (Lincoln County 2006). The Nevada Highway Patrol is responsible primarily for maintaining the public safety and law enforcement on Lincoln County highways (Lincoln County 2006). Fire protection services in Lincoln County are through volunteer fire departments located in the communities of Pioche, Panaca, Caliente, and Alamo, although the BLM provides fire protection capabilities for wild land fires (Lincoln County 2006). Primary emergency room services are provided through the Grover C. Dils Medical Center, while patients requiring more advanced treatment are transferred to Las Vegas or St. George, Utah (Lincoln County 2006). Ambulance service is available throughout Lincoln County, although ambulances are only based in Alamo, Caliente, and Panaca (Lincoln County 2006). The Lincoln County School District serves all of Lincoln County. New schools are financed through bonds (Lincoln County 2006).

4.14.2 Electricity

There is currently no electricity transmission within the project area.

4.14.3 Natural Gas

There is currently no natural gas transmission within the project area.

4.14.4 Propane

There is currently no propane available within the project area.

4.14.5 Water Supply

There is currently no water supply system within the project area.

4.14.6 Water Treatment

There are currently no water treatment plants serving the project area.

4.14.7 Sewer

There is currently no sewer service provided in the project area.

4.14.8 Telecommunications

In Lincoln County, telephone service is available countywide from Lincoln County Telephone. According to the 2000 U.S. Census, only 4.3 percent of households did not have phones in the county (U.S. Census Bureau 2000).

Currently, there are two fiber-optic lines bordering the Development Area in a north – south direction, adjacent to the U.S. Highway 93 right-of-way. One line is owned by Level 3 Communications and the other line is owned by the Lincoln County Telephone System, Inc., a Nevada corporation (LCTS). LCTS has a certificate of convenience and necessity issued by the Nevada Public Utilities Commission for the provision of voice telephone service within the Coyote Springs Development Area.

4.14.9 Landfills

A landfill located approximately 20 miles east of Panaca at Crestline provides for all of the solid waste needs in Lincoln County (Lincoln County 2006). Several transfer stations are located throughout Lincoln County, including Pioche, Panaca, Caliente, Alamo, Ursine (Eagle Valley), Hiko, and Rachel (Lincoln County 2006). None of these transfer stations are located within the project area. Solid waste disposal is provided by Norcal, a private contractor to Lincoln County. A second contractor, Western Elite, provides recycling services for construction and demolition debris (Lincoln County 2006). The Western Elite facility is located just west of U.S. Highway 93 at the north end of the project area in Lincoln County.

4.15 SOCIOECONOMICS

This section describes the existing socioeconomic conditions in Lincoln County, Nevada. The socioeconomic resource topics considered here are: 1) demographic characteristics of the region, including population, race/ethnicity, and potentially affected social groups; 2) housing; 3) economic base of the region based on measures of employment and income; and 4) fiscal resources of local governments. The build out of the proposed CSI Planned Development Project could affect socioeconomic resources in Lincoln County through a number of factors, including construction spending and labor requirements, an increase in housing supply and associated population levels, an increase in visitation to the region, and operation of proposed retail and commercial land uses.

The information in this section provides context to the anticipated socioeconomic impacts of the project and serves as the baseline against which potential socioeconomic impacts are evaluated (see Section 5.15). Information on race/ethnicity and income levels is also used in evaluating potential environmental justice impacts (see Section 5.16).

4.15.1 Population and Other Demographic Characteristics

Located in the southeast portion of Nevada, Lincoln County is primarily rural and sparsely populated. The present (2005) population in Lincoln County is estimated to be 3,886, making it the third least-populated county in the State of Nevada (Nevada State Demographer 2006). Current population in Lincoln County has

decreased by about 6.7 percent since 2000, when the population was 4,165, and is only slightly higher than 1990 levels. Table 4-11 summarizes population trends in Lincoln County since 1990.

Table 4-11 Population and Population Growth in Lincoln County (1990–2005)

Area	Population			Population Growth (percent)	
	1990	2000	2005	1990–2000	2000–2005
Lincoln County	3,775	4,165	3,886	10.3 percent	-6.7 percent
Caliente	--	1,123	1,015	--	-9.6 percent
Alamo	--	478	428	--	-10.5 percent
Panaca	--	632	562	--	-11.1 percent
Pioche	--	840	698	--	-16.9 percent
Source: Nevada State Demographers Office, 2006.					

Caliente is the only incorporated city in Lincoln County and represents the major population center near the project area. The population in Caliente in 2005 was 1,105, accounting for about 26 percent of the total county population. Unincorporated towns in Lincoln County include Alamo (428 residents), Panaca (562 residents), and Pioche (698 residents). Since 2000, populations in all of these cities and towns have decreased, mirroring countywide trends.

Future population trends in the area could be influenced by specific events, such as development of the National Nuclear Storage site at Yucca Mountain, the BLM land sale north of Mesquite (referred to in this document as the LCLA lands), and the CSI Development. Population projections prepared for Nevada counties indicate that population in Lincoln County is expected to increase to 5,292 by 2024, representing an average annual growth rate of approximately 1.6 percent between 2005 and 2024 (Nevada State Demographer, 2004).

The demographic characteristics of the region's population are presented in Table 4-12. In terms of gender, there is slightly greater proportion of males compared to females in Lincoln County, whereas this pattern is reversed in the City of Caliente. The average age in Lincoln County is nearly 39 years old, with 16 percent of the population over the age of 65. Caliente's population is relatively younger, with an average age of 33 years. Concerns have been raised by Lincoln County residents that their population is aging and that younger people are forced to leave because of lack of economic opportunity (Lincoln County, 1991; Gibbons, 2004).

Table 4-12 Demographic Statistics for Lincoln County, Nevada (2000)

Subject	Lincoln County		Caliente	
	Number	Percent	Number	Percent
Gender				
Male	2,162	51.9	531	47.3
Female	2,003	48.1	592	52.7
Age				
Median age (years)	38.8	--	33.1	--
18 years and over	2,910	69.9	684	60.9
21 years and over	2,777	66.7	648	57.7
62 years and over	831	20.0	218	19.4
65 years and over	673	16.2	183	16.3
Race				
One race	4,085	98.1	1,084	96.5
White	3,811	91.5	980	87.3
Black or African-American	74	1.8	22	2.0
American Indian and Alaska Native	73	1.8	34	3.0
Asian	14	0.3	7	0.6
Native Hawaiian and Other Pacific Islander	1	0.0	1	0.1

Table 4-12 Demographic Statistics for Lincoln County, Nevada (2000)

Subject	Lincoln County		Caliente	
	Number	Percent	Number	Percent
Race (continued)				
Some other race	112	2.7	40	3.6
Two or more races	80	1.9	39	3.5
Hispanic or Latino (of any race)	221	5.3	82	7.3

Source: U.S. Census Bureau, 2000.

Race (or ethnicity) is an important consideration for evaluating potential environmental justice-related effects of the proposed development. The predominant racial group in Lincoln County is White/Caucasian, which comprises roughly 92 percent of the population (U.S Census Bureau, 2000). Black and American Indian populations account for less than two percent of the population. The largest minority group is Hispanics (of any race), which makes up about five percent of the population. The racial makeup in the City of Caliente is slightly more diverse, with the White/
Caucasian population representing about 87 percent of the population and Hispanics accounting for over seven percent.

From a social perspective, the proposed CSI Development in Lincoln County would introduce new urban uses in a previously rural, undeveloped, and lightly populated region of Nevada. The communities and social groups that would be potentially affected by the proposed development are diverse. These range from new residents that would live in the proposed development, to residents and business owners of nearby communities, to members of the Moapa Band of Paiute Indians (on the Moapa River Indian Reservation), to visitors who come from a wide-range of locations to recreate in the project area, including nearby wilderness areas managed by the BLM.

4.15.2 Housing

In 2000, there were 2,178 housing units within Lincoln County (U.S. Census Bureau 2000). Of the total housing stock, 1,540 (or nearly 71 percent) were occupied units and 638 (or 29 percent) were vacant. Approximately 75 percent of the occupied units were owner occupied, leaving 25 percent as renter occupied. Nearly half (47.8 percent) of the vacant units were considered “seasonal, recreational, or occasionally-occupied” units. The average household size in Lincoln County is 2.48 individuals per household.

Census data also show that the housing stock in Lincoln County is relatively old. Approximately 22 percent of homes in Lincoln County were built before 1940, which is the second highest value across all Nevada counties, and substantially higher than the 1.7 percent value for the State of Nevada as a whole. Further, only about 17 percent of housing units in Lincoln County were built in 1990 or later, compared to 42 percent for the State of Nevada.

The median value of a home in Lincoln County was $80,300 in 2000, while the median gross rent was $328 per month.

4.15.3 Employment

Historically, agriculture and mining were the consistent employers in the region, but employment in these industries has decreased in recent years (Lincoln County 1991). In total, Lincoln County’s employment base in 2004 consisted of 1,946 full- and part-time jobs (Bureau of Economic Analysis 2004a). This represents a decrease of over 19 percent compared to the 1990 employment level of 2,416 jobs in the county.

Table 4-13 shows current employment by industry in Lincoln County.[10] Non-farm employment accounts for most of the jobs in the county (92 percent), while farm employment only accounts for about eight percent of Lincoln County’s job base. One of the largest sectors is local, state, and federal government, providing

[10] Based on the small size of Lincoln County’s economy, many economic data for specific industries are not disclosed for confidentiality reasons.

615 jobs and accounting for nearly 32 percent of all employment. This is due in part to the presence of the Nevada Test Site in Lincoln County. Retail trade also plays an important role in the local economy, making up 13.3 percent of the county's employment. Other sources indicate that government and tourism currently account for over 62 percent of employment in Lincoln County (University of Nevada at Reno 2004).

Table 4-13 Lincoln County Employment by Industry, 2004

Category	Jobs	Percentage
Total employment	1,946	100.0 percent
Farm Employment	147	7.6 percent
Non-Farm Employment	1,799	92.4 percent
Forestry, fishing, agricultural services	(D)	--
Mining	(D)	--
Utilities	(D)	--
Construction	(D)	--
Manufacturing	(D)	--
Wholesale trade	(D)	--
Retail Trade	258	13.3 percent
Transportation and warehousing	58	3.0 percent
Information	(D)	--
Finance and insurance	(D)	--
Real estate and rental and leasing	(D)	--
Professional and technical services	(D)	--
Management of companies and enterprises	(L)	--
Administrative and waste services	38	2.0 percent
Educational services	(L)	--
Health care and social assistance	50	2.6 percent
Arts, entertainment, and recreation	(D)	--
Accommodation and food services	(D)	--
Other services, except public administration	(D)	--
Government and government enterprises	615	31.6 percent

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2004a.

(D): Not shown to avoid disclosure of confidential information, but the estimates for this item are included in the totals
(L): Less than 10 jobs, but the estimates for this item are included in the totals.

Unemployment is another measure of the strength of the local economy. In 2005, the labor force in Lincoln County totaled 1,552. Of this, 1,473 people were employed, resulting in an unemployment rate of 5.1 percent (Nevada Department of Employment, Training & Rehabilitation 2006).

4.15.4 Income

Total personal income in Lincoln County was $93.0 million in 2004 (Bureau of Economic Analysis 2004b). About $63.2 million (68 percent) of the total represented earnings by place of work (wage earnings plus proprietors income). Average earnings per job in Lincoln County in 2003 were $32,494. As expected from the employment figures, government accounts for a large proportion (47 percent) of earnings countywide.

As derivatives of total personal income, per-capita and median household income and poverty rates represent additional economic indicators of social well-being. In 2003, per-capita personal income in Lincoln County was $21,542, while average median household income was $31,979 (U.S. Census Bureau 2000). Poverty rates represent the percentage of an area's total population living at or below the poverty threshold; the U.S. Census Bureau established 48 poverty thresholds that are based on size of the family and age of family members.

Based on 2000 Census data (1999 income data), the poverty rate for families in Lincoln County was 11.5 percent.

4.15.5 Fiscal Resources

The total operating budget in Lincoln County in Fiscal Year (FY) 2004-05 was estimated to be $6.8 million (Nevada Department of Taxation 2005a). Tax revenues and intergovernmental transfers represent the largest sources of fiscal revenues in Lincoln County. Taxable sales in Lincoln County in FY 2004-05 were $30.0 million. In terms of property taxes, the total assessed value of real and personal property in the county (after exemptions) was $97.2 million in FY 2004–05 (Nevada Department of Taxation 2005b). Projected property tax revenue accruing directly to Lincoln County in FY 2005-06 is $1.5 million (Nevada Department of Taxation 2005c). Lincoln County also receives payments in lieu of taxes (or PILT payments) from the federal government; in FY 2005-06, these payments totaled $419,800 for over 6.4 million acres of federal land in the county (BLM 2006).

4.16 HAZARDOUS MATERIALS

A Phase I assessment was conducted on CSI property in March 2005 in accordance with American Society for Testing and Materials (ASTM) Practice E 2247-02. The goal of the Phase I assessment was to identify recognized environmental conditions on the property. The term “recognized environmental conditions” means the presence or likely presence of any hazardous substance or petroleum products on the property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substance or petroleum products into structures on the property or into the ground, groundwater, or surface water on the property.

The assessment noted that a small amount of municipal waste had been dumped at sites along Old Hwy 93 and the perimeter of the property, outside of CSI lands. These sites were not considered a recognized environmental condition in accordance with ASTM Practice E 2247-02.

The primary potential sources for hazardous materials in the area are U.S. Highway 93 and State Route 168. These highways are exposed to the typical petroleum products associated with automotive and truck traffic. Stormwater from these roads enters nearby ephemeral washes.

SECTION 5

Environmental Consequences

Section 5: Environmental Consequences

This Environmental Consequences section analyzes both beneficial and adverse impacts that could result from implementing any of the alternatives described in this EIS. As required by the Council on Environmental Quality (CEQ) regulations implementing NEPA, a summary of the environmental consequences of each alternative is provided in the Executive Summary. The resource topics presented in this section and the organization of the topics correspond to the resource discussions contained in Section 4: Affected Environment.

NEPA requires disclosures of direct, indirect, and cumulative effects as well as mitigation measures. Direct effects are those that occur at the same time and place of the project action. Indirect effects caused by the project action occur later in time or at another location. Cumulative effects refer to the combined effects of a particular alternative with other projects and actions that could affect the same resources.

If a management activity greatly changes the amount or quality of an environmental factor (i.e., those issues identified in Section 4: Affected Environment), the effect qualifies as significant. Significant effects may be positive or negative. Significant effects of some management activities may be unavoidable, have different short and long-term consequences, or involve irreversible changes. Some negative effects may be mitigated to a level of non-significance.

5.1 AREA OF ANALYSIS

Unless stated in an analysis for a specific resource topic, the area of analysis considered for all alternatives will be the project area, located in southern Lincoln County and northern Clark County (see Figure 3-1).

5.2 BIOLOGICAL RESOURCES

5.2.1 Evaluation Criteria

Evaluation of impacts under NEPA is based on both the context and intensity of the action. Impacts to biological resources are considered to have a significant effect on species or their habitat if an action would substantially affect a species' population, or substantially diminish the quality or quantity of its habitat. Examples of potential direct effects to species include disturbance, injury, or mortality that may occur during construction or maintenance activities, including alterations to habitat. Examples of potential indirect and secondary effects to species or habitats due to project activities could include alterations or loss of habitat that may occur later in time due to groundwater pumping, increased habitat fragmentation by roadways due to changes in traffic patterns, disturbance to wildlife due to increased wildland recreation, and changes in the amount and quality of surface waters that flow through the project area due to runoff from urban developments and changes in channel morphology. Factors considered in this analysis include the relationship of the affected area to the species distribution, potentially affected life history stage, type of effect, duration or frequency of the effect, and potential response of the listed species to the effect. The evaluation of effects assumes the implementation of BMPs and other mitigation designed to reduce impacts.

Effects criteria are also provided through statutes and ordinances of various jurisdictional entities. The USFWS implements the ESA, and through regulation has established when consultation by the project proponent with the USFWS is required based on effect thresholds that include impacts to listed species' habitat, the potential "take" of listed species, and when effects to listed species may be considered insignificant and discountable, or beneficial. For BLM sensitive species, evaluation criteria include whether the Preferred Alternative would lead to a trend toward federal listing of the species. The terms and conditions of the CSI MSHCP and its associated incidental take permit also are considered. The thresholds established by the CSI MSHCP relate to "no net unmitigated loss" and continued protection of habitats on federal lands for Covered Species. NDOW's

Comprehensive Wildlife Conservation Strategy (NDOW 2005) is a planning document that provides management strategies for conserving wildlife in key habitats of Nevada.

5.2.2 Comparative Analysis of Alternatives

5.2.2.1 No Action Alternative

5.2.2.1.1 Vegetation

DIRECT EFFECTS

Under the No Action Alternative, the proposed CSI MSHCP and creation of the CSICL would not occur. The existing land configuration of the CSI private and lease lands would be maintained. Lease lands in Lincoln County would remain an island within the privately-owned land. Under this alternative, no direct effects to vegetation would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County, totaling 21,454 acres, would be sold to individual landowners. If development of individual parcels were to occur, then the vegetation most likely to be affected would be Sonora-Mojave Creosotebush White Bursage Desert Scrub, and to a lesser extent, Sonora-Mojave Mixed Salt Desert Scrub. Up to 21,454 acres of vegetation could be permanently lost or altered due to construction activities, although likely due to a lack of coordinated infrastructure, the full 21,454 acres would unlikely be impacted. Lands leased by CSI (7,548 acres) in Lincoln County could be developed for roads or utilities, which would result in additional disturbance and loss of vegetation. Only small portions of these lands would be expected to be disturbed. Individual landowners would be responsible for vegetation clearing on a parcel-by-parcel basis. Adverse effects on vegetation would occur in those areas that were disturbed for development and infrastructure activities. Effects would likely be temporary in those areas disturbed for installation of infrastructure and permanent for those areas where development could occur.

INDIRECT EFFECTS

No indirect effects to vegetation would occur under the No Action Alternative.

However, as a result of choosing the No Action Alternative, CSI could sell their lands in Lincoln County to individual landowners. If development of individual parcels were to occur, vegetation resources could be disturbed in small areas in various areas of the 21,454 acres, resulting in the remaining vegetation being fragmented at the local level.

Conversion of undisturbed desert habitat to urban development has the potential to increase the incidence of non-native weed species into wildlife habitat. Therefore, the spread of invasive weed species would most likely occur as a result of development of individual parcels. A weed management plan to monitor and control invasive plants in disturbed areas of the Development Area and the CSI lease land, as proposed in the CSI MSCHP, would not be implemented. A coordinated and comprehensive effort among individual landowners to control and monitor invasive plants within the Developed Area and lease land in Lincoln County would be unlikely to occur.

5.2.2.1.2 Wildlife

DIRECT EFFECTS

Under the No Action Alternative, no direct effects to wildlife would occur. The current land configuration would be retained resulting in an island of federal land surrounded by private lands. Lands leased in Lincoln County from BLM would not be available for reconfiguration and attachment to the Coyote Springs Investment Conservation Lands.

Currently, only Old Highway 93, an abandoned jeep trail, and Kane Springs Road occur on the CSI lands in Lincoln County. Due to the rural nature of Lincoln County and low population density (less than one person

per square mile), traffic levels on nearby U.S. Highway 93 and State Route 168 are very low, which limits the potential for vehicle/wildlife conflicts.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County, totaling 21,454 acres, would be sold to individual landowners. If development were to occur on portions or all of the 21,454 acres, then wildlife habitat would be permanently affected. However, due to a lack of infrastructure, individual landowners would be unlikely to develop the full 21,454 acres. Lands leased by CSI (7,548 acres) in Lincoln County could be developed for roads or utilities, which would result in disturbance and loss of habitat. Effects to birds, reptiles, and small mammals could occur from habitat loss as well as disturbance and potential mortality during ground-clearing activities. Large mammals would lose habitat in the long term, but no injury or mortality would be expected because large mammals could leave the area during ground-clearing activities. Development under the current land configuration would block wildlife movement corridors. In addition, vehicle/wildlife conflicts would be expected to increase as a result of residents and their vehicles permanently occurring in the area. Individual landowners would be responsible for actions resulting in take of wildlife.

INDIRECT EFFECTS

Under the No Action Alternative, no indirect effects to wildlife would occur. However, as a result of choosing the No Action Alternative, CSI could sell their lands in Lincoln County to individual landowners. If individual parcels were developed, habitat fragmentation would occur as a result of the current land configuration, since development would be interspersed within federal lands. In addition, without coordinated ordinances in place for trash management, urban wildlife issues could become problematic. Ravens and other scavengers could become prevalent in the area, to the detriment of prey species (e.g., small mammals, lizards, small birds) that previously did not coexist with ravens in the area.

5.2.2.1.3 Special Status Species

DIRECT EFFECTS

Under the No Action Alternative, the proposed CSI MSHCP and creation of the CSICL would not occur. The existing land configuration of the CSI private and lease lands would be maintained. Lease lands in Lincoln County would remain an island within the privately-owned land. Under this alternative, no direct effects to special status species would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County, totaling 21,454 acres, would be sold to individual landowners. Future piecemeal development may result in adverse effects to ground-dwelling special status species, such as desert tortoise, banded Gila monster, and western burrowing owl, and other sensitive species with potential habitat on up to 21,454 acres in the project area. Lands leased by CSI in Lincoln County (7,548 acres) could be developed for roads or utilities, which would result in disturbance and loss of habitat for terrestrial special status species including desert tortoise, banded Gila monster, and western burrowing owl. No direct effects would occur to the Moapa dace and Virgin River chub, as both species are located 17 miles downstream. The level of adverse effects would depend upon the amount of development that occurs in the future. As mentioned previously, individual landowners would be responsible for determining if protected wildlife exists on or near their parcels. Incidental take of federally listed species or candidate species would be addressed on a project-by-project basis through small scale HCPs, or Section 7 consultations where federal actions are involved.

INDIRECT EFFECTS

Under the No Action Alternative, no indirect effects to special status species would occur. However, as a result of choosing the No Action Alternative, CSI could sell their lands in Lincoln County to individual landowners. If individual parcels were developed, then habitat fragmentation from development of individual parcels would occur. In addition, without coordinated ordinances in place for trash management, urban wildlife issues could become problematic. Ravens and other scavengers could become prevalent in the area, to the detriment of prey species (e.g., juvenile desert tortoise).

Unless requested by Lincoln County for the protection of U.S. Highway 93, a regional system of stormwater detention basins and other flood management activities would not be implemented. Sedimentation of habitat in the Pahranagat Wash incised ephemeral channel from land clearing, deposit of fill in some ephemeral washes, and other ground disturbing activities, as well as alteration of runoff patterns, have the potential to affect stormwater peak flows, sedimentation, and water quality downstream.[11] Perennial aquatic habitat that would support Moapa dace and Virgin River chub is found approximately 17 miles downstream of the Development Area, where Muddy and Warm Springs contribute to the perennial flow of the Muddy River. Continuous flow in the Pahranagat Wash incised ephemeral channel to the Muddy River occurs only during very large storm events (100-year or greater). Therefore, indirect effects to aquatic habitat and the Moapa dace and Virgin River chub that reside in the Muddy River are not likely to occur.

5.2.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

5.2.2.2.1 Vegetation

DIRECT EFFECTS

Development of the planned community would result in the loss of native vegetation of 20,716 acres in the Development Area and up to 244 acres in the BLM utility corridor. Because of cluster development design and setbacks from all preserved WOUS, total acreage affected within the 21,454-acre Development Area would be less. The avoided WOUS and upland buffer habitat would reduce the total acreage in which activities could occur to 20,716 acres within the Development Area (21,454 acres less 25.2 acres of protected existing WOUS and 712.5 acres of associated upland buffer habitat). Temporary disturbance to vegetation may occur as restoration of some desert dry washes occurs. However, restored washes would be protected in a conservation easement and would subsequently be revegetated with native plants as necessary. Portions of an additional 67.4 acres of upland habitat associated with preserved, restored WOUS (see Tables 3-6 and 3-7) could be temporarily impacted within the Development Area from activities in the buffer areas, but these areas would be revegetated with native vegetation and protected in a maintenance easement.

Additional measures would limit impacts to vegetation, through control of invasive plants and restoring and landscaping areas with native plants.

CSI has entered into a native plant seed collection agreement and a native plant collection agreement with the Springs Preserve, a department of the Las Vegas Valley Water District (LVVWD) (CSI and Springs Reserve 2005b, 2005a, respectively). In addition, CSI has entered into a Native Plant Salvage agreement with Native Resources Nevada for the purpose of salvaging native plants that would otherwise be lost as a result of surface disturbing activity (CSI and Native Resources Nevada 2006). Under these agreements, Springs Preserve would be allowed to salvage native plant species for use in restoration at the Springs Preserve site. Springs Preserve is required to give a percentage of the salvaged plants back to CSI to use in its revegetation efforts. Through these measures, CSI would be able to salvage many of the existing plants and preserve the genetic diversity and uniqueness of the area. Much of the Development Area would be relandscaped with the salvaged plants removed pre-construction; also, CSI's nursery would be able to contain many of these plants.

Open space would be designated within the Development Area, where vegetation would not be adversely impacted. Corridors along ephemeral washes would be preserved. Recreational facilities developed into parks, golf courses, and sports fields would result in the permanent alteration of vegetation communities.

Construction of utility lines, a sewage treatment plant, and other utility structures in the Development Area would result in permanent adverse effects to vegetation through direct loss, change in edge vegetation, and conversion to landscaped areas.

[11] Water quality impacts from small, single-landowner disturbances could be unregulated, because the NPDES stormwater program requires permits for operators of construction sites one acre or larger (except for smaller sites that are part of a larger common plan of development).

As part of the development, roads and bridges would be constructed. Where roads would be constructed, vegetation communities would be permanently lost.

With ground disturbance, the potential for invasive plant species to expand into the Development Area would increase. The Weed Management Plan (included in Appendix J) would address the potential for the spread of invasive plant species. The management plan to be developed for the CSICL would likely address invasive plant species management. Research funded through the CSI MSHCP also would address invasive species in the CSICL lands.

A portion of the CSI lands would be developed for horticulture (cultivated vegetation), which would result in the loss of native vegetation.

The construction of facilities, such as reclaimed water facilities, would result in the permanent loss of vegetation communities within the construction footprint.

Flood control measures within the project area would result in altered vegetation communities where drainage patterns have been altered. A SWPPP would be developed to minimize sedimentation and erosion. Construction of detention basins would result in disturbance where detention basins and stormwater conveyance facilities are constructed within the Development Area and up to 244 acres of vegetation communities along the BLM utility corridor from detention basin construction. The CSICL would set aside 13,767 acres and vegetation would be preserved within the resource area. Vegetation in the CSICL would be affected from construction of educational kiosks, recreation using existing trails, and restoration of WOUS. An additional 779.9 acres would be set aside as a buffer zone conservation easement for WOUS within the Development Area. Of this area, 712.5 acres of upland buffer habitat associated with existing WOUS would be protected (see Table 3-8).

Overall, potential vegetation lost as a result of development activities in the Development Area would be a small portion of total vegetation available within Lincoln County. Sensitive vegetation areas would be avoided, with only minimal effects to these areas from flood control measures. Effects to vegetation would be unlikely to affect the viability of plant communities in the localized area, given that the desert shrub and badland communities within the Development Area are ubiquitous in the region and CSI would be preserving native seeds and individual plants in order to maintain genetic stock for restoration and revegetation efforts. Outside of the Development Area, these vegetation communities would be preserved in the CSICL and protected on BLM lands. For these reasons, direct adverse effects to vegetation under the Preferred Alternative would not be considered significant.

INDIRECT EFFECTS

Indirect effects to vegetation could result on lands adjacent to the Development Area, through the creation of an artificial edge along the boundaries. This could result in changes to the species composition of adjacent vegetation.

Invasive species could potentially be given the opportunity to establish themselves within the Development Area and expand outside of this area. The proposed Weed Management Plan conservation measure would minimize the potential of this becoming an adverse effect through annual monitoring and control efforts.

5.2.2.2.2 Wildlife

AQUATIC SPECIES

DIRECT EFFECTS

HABITAT QUALITY AND QUANTITY

Construction and maintenance operations under the Preferred Alternative have the potential to affect organisms that utilize seasonal aquatic habitat. Due to the ephemeral nature of the waters within the project area, no fish species are present. All in-channel construction would be completed when there is no surface flow. Furthermore, CSI would implement State of Nevada and Lincoln County stormwater

management requirements for construction site owners and operators. Therefore, there are likely to be no significant, short-term, direct impacts to aquatic organisms or their habitat within the project area.

Implementation of conservation easements along the Pahranagat Wash incised ephemeral channel would make it possible to avoid construction activities on 25.2 acres of desert dry washes and 737.7 acres of associated upland buffer habitat. A conservation buffer on these channels and a conservation easement on the Pahranagat Wash incised ephemeral channel (WOUS) also would reduce the impact on aquatic habitat (see Table 3-8).

Within the BLM utility corridor, up to eight detention basins totaling up to 244 acres may also be constructed. Potential impacts of the Preferred Alternative on aquatic species and their habitat would be concentrated on the remaining desert dry washes. Alterations within these washes would be designed so that a naturalized system of stormwater conveyance is maintained. The use of local or on-site substrate material and revegetation with native plant species would help to preserve the quality of the affected washes within the Development Area. Construction under the Preferred Alternative would likely reduce the habitat value of some of the desert dry washes within the Development Area through constructing urban environments surrounding the desert dry washes. These impacts would be addressed through the conservation measures required under the CSI MSHCP, construction and post-construction stormwater BMPs, and other project features.

The proposed land configuration would maximize aquatic habitat connectivity with upstream federal lands. In combination with the buffer on each side of the Pahranagat Wash incised ephemeral channel and other existing dry desert washes, 32.1 preserved acres and 63.4 restored acres of desert dry washes would be protected (see Table 3-8).

SURFACE FLOW AND CHANNEL GEOMORPHOLOGY

To control peak flood events, CSI proposes a series of stormwater detention basins along the west side of U.S. Highway 93. Flood control operations inherent in the proposed alteration of washes, construction of bank stabilization structures, and construction of detention basins have the potential to alter streamflow and sediment transport. This in turn has the potential to result in alterations of channel morphology, including streambed and streambank stability and maintenance of channel equilibrium conditions (i.e., channel aggradation or degradation) (see Section 5.4: Hydrology and Water Quality).

Adequate flows are periodically needed in a natural channel to maintain channel geomorphic conditions. High flows mobilize the streambed and transport sediments, creating bed forms and cleaning fines from the streambed. However, high-magnitude flows could also scour gravels or other coarse sediments in the streambed, as well as result in bank erosion, which could alter seasonal aquatic habitat. Insufficient flows of moderate magnitude, however, can alter the long-term balance of sediment supply and sediment transport, resulting in channel aggradation. Ideally, there is a balance between periodic mobilization of the streambed, sediment transport processes, and stability of the streambed sediments. On average, the natural channel-forming flow should occur in approximately two out of every three years (Dunne and Leopold 1978).

Under the Preferred Alternative, a larger, naturalized system of conveyance and detention together with an aquifer recharge program would retain and control flood flows, so that storm events continue to flow through the project area with minimal impacts from urban development. Sufficient drainage channels would be created on the desert dry washes to comply with flood control guidelines established between Lincoln County and CSI for the CSI Development. Therefore, the proposed system of conveyance, detention and aquifer recharge would be expected to result in no significant impact on seasonal aquatic habitat.

Detention basins are often required for new developments. Urbanization increases stormwater runoff volumes and peak flow rates, while often decreasing the area of historical flood plains. Detention facilities temporarily store stormwater runoff and limit peak runoff rates. By capturing streamflow in detention storage until they fill and spill, on-site detention basins can control the magnitude and timing of downstream flow. An off-site detention basin would be used to capture a portion of flood flows and release them over a longer period of time, thereby decreasing the magnitude of downstream flood flows.

An on-site detention basin would be used to concentrate sediment deposition in an area where minimal disturbance will be required to remove the load. This would decrease the need to perform extensive sediment maintenance over longer lengths of channel in downstream areas. Changes in hydrology that would result from this system of detention and conveyance are not expected to have significant impacts on aquatic habitat downstream of the project area. As discussed in Section 5.4: Hydrology and Water Quality, local attenuation of the stormwater hydrograph would be observable for localized thunderstorms, but changes during larger, regional storms would be imperceptible because of the relatively small contribution of the project area, including the drainages west of U.S. Highway 93.

SEDIMENT TRANSPORT AND CHANNEL MORPHOLOGY

Construction work within a dry stream channel could result in an increase in mobilization of sediment during the "first flush" of the subsequent rainy season. An increase in sediment deposition may affect seasonal aquatic habitat; although, the desert dry washes on-site contain no aquatic organisms that would be affected by sediment loading. Effects related to installation and maintenance of bank stabilization structures would have the potential to be both positive and negative. Positive effects are associated with reduction or prevention of erosion and resulting sedimentation in the channel. Negative effects may be associated with loss of the complexity of habitat and cover naturally provided by undercut banks and exposed root wads.

The unconsolidated sediments of the alluvial fans and surrounding hillsides contribute to a natural tendency for sedimentation in stream channels during storm runoff. The Preferred Alternative would not be likely to negatively impact sediment transport or channel geomorphology during storm-flow events. CSI would implement naturalized stormwater corridors to prevent increased erosion of sediments into downstream drainages. Stormwater management of the Development Area would be designed to manage excess sediment while having no significant impact on the hydrograph of the Muddy River during large storm flows (100-year flood events and greater).

WATER QUALITY

The Preferred Alternative has the potential to affect water quality within the Development Area by altering storm runoff patterns. Urban runoff also has the potential to degrade water quality. As described in the alternative description, measures would be implemented to enhance the quality of runoff, thereby minimizing potential impacts to aquatic species and their habitats downstream and reducing them to a level of no significant impact. Clark County Regional Flood Control District's (CCRFCD) Hydrologic Criteria and Drainage Design Manual (August 1999) has special requirements for development on alluvial fans. The manual requires all new development to include the planning, design, and construction of drainage facilities consideration of both the minor (10-year) and major (100-year) storm events and include emergency flow paths for flows exceeding the major storm. Clark County encourages the design of drainage facilities and other measures that enhance the quality of storm runoff. CSI and Lincoln County would develop standards similar to the CCRFCD's standards for Clark County, and these would be implemented within the Development Area and BLM utility corridor.

INDIRECT EFFECTS

Those species associated with riparian and aquatic habitats downstream of the Pahranagat Wash incised ephemeral channel within the Muddy River could potentially be affected by indirect project-related activities resulting from changes within the Pahranagat Wash incised ephemeral channel related to flood flow dynamics, sediment movement, and water quality and quantity.

Conservation of aquatic habitat is dependent, in part, upon maintaining water quality and quantity within the Muddy River and associated drainages. Conservation measures for WOUS identified under the Preferred Alternative would be implemented to enhance the quality of runoff, thereby minimizing potential impacts to aquatic species and their habitats within the Muddy River Basin.

TERRESTRIAL WILDLIFE SPECIES

DIRECT EFFECTS

Community development within the Development Area would result in the direct loss of 20,716 acres of habitat. Species that depend on this habitat may be displaced or lost within the Development Area. An additional 67.4 acres of upland habitat adjacent to the preserved, restored WOUS could be temporarily impacted within the Development Area through activities in the buffer areas, but these areas would still provide habitat for wildlife species in the long term (see Table 3-8). Within the BLM utility corridor, up to eight detention basins totaling up to 244 acres may be constructed. These detention basins would permanently alter localized habitats for terrestrial wildlife species.

Tortoise fencing on the north and east side of the Development Area would completely remove the area as habitat for those reptiles and small mammals unable to fit through the fence, while larger mammals such as desert bighorn sheep could cross over the short fencing. Generalist species, such as some species of birds and small mammals that can also use suburban and urban habitats, would be less affected than species that require undisturbed creosote-bursage scrub habitats. Overall, the effects of these actions would be long term and adverse.

Establishment of the CSICL would protect and manage over 13,767 acres of creosote-bursage scrub habitat, which would help offset the loss of terrestrial wildlife habitat within the Development Area. Some lands within the CSICL may be affected by construction of educational kiosks, restoration of WOUS, and associated negative impacts to wildlife due to increased human presence along existing trails; however, locations of these areas could be shifted to minimize effects to habitat. Within a buffer zone conservation easement, an additional 737.7 acres of upland habitat would also be permanently protected. The land configuration under Preferred Alternative would also maintain habitat connectivity between the CSICL and ACECs to the east. The buffer zone conservation easement could serve as a movement corridor through the Development Area for many wildlife species.

Mitigation measures that would be components of the CSI MSHCP would result in funding of additional recovery efforts outside of the project area. Associated improvements to upland habitats from addressing fire frequency and invasive species management would improve habitat for other wildlife species that could occur in habitats where desert tortoise occur. These could include ground squirrels, jackrabbits, snakes, lizards, and ground-dwelling bird species such as Gambel's quail (*Callipepla gambelii*).

The large size of ACECs with creosote-bursage scrub habitat surrounding the CSI lands in Lincoln County and the additional protected lands comprising the adjacent CSICL would ensure that wildlife populations such as chuckwalla, desert pocket mouse, and bighorn sheep in the local area would remain viable over the long-term. For these reasons, conversion of the Development Area into a planned town would not be likely to result in significant effects to non-special status terrestrial wildlife species and their habitats.

Most native bird species that are likely to be encountered in the project area are protected under the MBTA, and thus, any incidental take of these species would be a violation of the MBTA.[12] If grading or land clearing occurred during the bird breeding season, migratory bird surveys would be conducted in the area to be disturbed. If surveys determined that nesting birds or chicks are present, the nest would be avoided until chicks have fledged. Effects to migratory birds would be displacement and loss of habitat.

INDIRECT EFFECTS

With anticipated increases in traffic along U.S. Highway 93, there is the potential for increased mortality of wildlife species while as they attempt to cross the roads. Movements of mule deer and bighorn sheep within and across Coyote Spring Valley may be impacted by roadway use patterns, developments, and an increase in human activities throughout the area. Seasonal movements of bighorn sheep among the Arrow Canyon Range, Las Vegas Range, Meadow Valley Mountains, and Sheep Range may be impacted. Increased traffic may result in a decrease in the number of attempted roadway crossings by wildlife, increase the amount of road mortality, and increase the level of fragmentation of wildlife populations. Small mammals, birds, snakes, and lizards

[12] A take does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof. The MBTA does not protect habitat for migratory birds.

would be most likely to be adversely affected by these actions. As approved by state and federal transportation agencies, culverts and roads would be designed where possible to allow for wildlife corridors, through the development of soft-bottomed culverts and underpasses.

Increased short-term and long-term noise levels could adversely affect wildlife that are not adapted to existence near human environments, where noise levels are elevated. The potential for toxic effects exists from accidental spills and use of toxic materials in the project area for construction and industrial activities; however, as described in the Hazardous Materials section, the potential for toxic materials to enter the environment would be minimized through adhering to state and federal regulations.

Development of residential and commercial buildings and permanent human presence in a previously uninhabited area would likely attract urban wildlife within the developed portion of the project area. Given the distance from any urbanized area, some time could pass before such species would appear within the project area. Bighorn sheep may be attracted to golf courses or parks for forage, although fencing around the development or housing areas would minimize the availability of forage. Non-native birds such as European starlings, house sparrows, and pigeons could be attracted to the urbanized landscape and sources of food. Ducks, coots, and Canada geese could be attracted to water sources, such as retention basins proposed in the Development Area. Loss of habitat due to development and human encroachment on surrounding mountainous habitat will eventually lead to urban wildlife encounters or interactions involving conflicts with larger predators like coyote, bobcat and mountain lion. Raccoons, ravens and other secondary predators could eventually be attracted to sources of food, although avoidance measures such as ordinances for trash disposal and litter would reduce these food sources to very low levels. Presence of these species could affect non-special status native species that would continue to reside within the Development Area and along its edges in undisturbed habitats. Where ordinances are ineffective and the species becomes a human safety concern, more aggressive response will be initiated, including removing the problem wildlife.

Development in Coyote Spring Valley may favor higher frequency of bat use and perhaps habitation by some species, especially over open water and irrigated turf, and in or about residential, commercial, and landscaping features. While this may be perceived as a conservation bonus, urban wildlife issues may arise and present conservation conflicts (e.g. roost sites vs. disease vector).

Construction within the project area would create light pollution in the area. This could confound navigation for migratory birds and potentially affect interspecies interactions and physiology of some wildlife species (Deda et al. 2007). However, the CCRs for the development would limit the amount of light pollution that would occur and the manner that lighting would be constructed in the project area. Downward facing lights would minimize the effects to the nightscape and thereby reduce adverse effects to migratory birds and other wildlife species.

5.2.2.2.3 Special Status Species

The desert tortoise, banded Gila monster, western burrowing owl, and three-corner milkvetch may be directly affected by community development and construction activities within the Development Area. Indirect effects may impact Moapa dace, Virgin River chub, desert tortoise, banded Gila monster, Moapa White River springfish, Moapa speckled dace, relict leopard frog, western burrowing owl, southwestern willow flycatcher, Yuma clapper rail, Las Vegas buckwheat, three-corner milkvetch, and sticky buckwheat.

COVERED SPECIES

DIRECT EFFECTS

Community development and construction would result in direct effects to three Covered Species, the desert tortoise, banded Gila monster, and western burrowing owl. Direct effects to these species consist of direct mortality during construction, habitat loss and degradation, and roadway mortality.

Land development activities would eliminate up to approximately 20,716 acres of designated desert tortoise critical habitat in the Development Area (21,454 less 25.2 acres of protected, existing WOUS and 712.5 acres of adjacent upland buffer habitat) and up to 244 acres of desert tortoise critical habitat in the BLM utility

corridor. This loss would be the result of conversion of land from desert scrub to human residential, commercial, recreational, and light industrial use and areas of WOUS restoration.

CSI private and lease lands in Lincoln County are part of the 427,900-acre Mormon Mesa CHU. Approximately 8,200 acres, or two percent, of the Mormon Mesa CHU has been lost or disturbed by development (USFWS 2006 unpublished data). The additional loss of up to 20,960 acres of critical habitat within the 427,900-acre Mormon Mesa CHU represents approximately 5 percent of the existing critical habitat unit. Large blocks of protected federal land make up most of the critical habitat unit managed as Areas of Critical Environmental Concern. A total of 6.45 million acres of critical habitat designated for the Mojave population of the desert tortoise. The development of up to 20,960 acres of CSI lands would be a loss of 0.32 percent of designated critical habitat rangewide. The loss of 0.32 percent of critical habitat is not anticipated to appreciably diminish the capability of the critical habitat rangewide to satisfy essential requirements of the species.

Land development activities would result in the loss or alteration of potential habitat for the banded Gila monster and western burrowing owl within the Development Area and BLM utility corridor. The primary threat contributing to declines in banded Gila monster populations is the loss of habitat due to urbanization. Similarly, loss of habitat is one of the main threats to the persistence of the western burrowing owl, as native habitats are converted to agriculture and development (Klute et al. 2003). However, burrowing owls are known to use urban and semi-urban areas (Klute et al. 2003), so they could potentially use some of the resulting habitat after construction is completed and vegetation has regenerated. Use of recreational facilities with OHVs, horses, and pedestrian activities has the potential to result in disturbance to burrowing owls that use of altered habitats.

To offset the effect on 20,716 acres of desert tortoise habitat and potential banded Gila monster and burrowing owl habitat to be impacted on CSI private lands, a combination of a one-time per-acre mitigation fee ($800) would be paid by the developers and CSI for disturbing that habitat as well as the permanent protection and management of 13,767 acres of the CSICL. The funds generated from the mitigation fees collected could then be used to implement the variety of mitigation measures that would be expected to offset the effects to desert tortoise, banded Gila monster, and western burrowing owl. Specifically, the results of research efforts funded by the CSI MSHCP are expected to have beneficial effects that would likely extend beyond the project area and enhance critical habitat constituent elements for desert tortoise throughout Lincoln County, Nevada.

In addition, the phased approach to development (the limit of 2,000 acres of disturbance per year for the first eight years) would ensure that for the first eight years, when the majority of development would occur, there would be timely monitoring of the effectiveness of implementing the proposed avoidance, minimization, and conservation measures for the Covered Species in the CSI MSHCP. Before the next 2,000 acres would be disturbed, through the AMP, recommendations of alternative conservation actions, if any, could be made through the AMP and implemented in the subsequent year.

Roads constructed in the Development Area could affect the banded Gila monster, western burrowing owl, and in the project area. These species are at risk from increased vehicular traffic on roads and highways (i.e., U.S. Highway 93, State Highway 168) as residents move into the CSI Development in Lincoln County. Roads have the effect of increasing mortality rates due to vehicle collisions. Tortoises are frequently killed or collected on freeways, paved highways and roads, and dirt roads, resulting in depletion of adjacent populations (e.g., Boarman et al. 1992). This may be more pronounced for juveniles, as they can be difficult to detect. Indeed, numbers of juvenile desert tortoises on permanent study plots in California were significantly lower adjacent to well-used dirt and paved roads (Berry and Turner 1984). Additionally, tortoise population densities are often depressed near paved roads and highways potentially due to road-related mortality. This effect has been observed at least within 0.5 miles of paved highways (Boarman et al. 1997).

In addition, during construction activities, the potential for direct mortality of desert tortoise, banded Gila monster, and western burrowing owl exists, either through hitting them aboveground or running over desert tortoises or western burrowing owls inside their burrows with heavy equipment. Measures proposed by CSI to install permanent tortoise-proof fence to prevent desert tortoises from entering the material site prior to site use; conduct tortoise clearance surveys after the fence has been completed and prior to site use; relocate tortoises as directed by the DTTRO; require a qualified desert tortoise biologist to be present during fence construction and work activity; require fence maintenance during site use; and require a speed limit for all

vehicles on the project site and access roads should minimize most of the above effects. In addition, the USFWS (2007) burrowing owl pamphlet and NDOW's banded Gila monster 2007 guidance would be followed during construction activities and would help to avoid and minimize the above impacts to these species.

Although clearance surveys and translocation of tortoises would avoid and minimize incidental take of desert tortoise, a limited potential for take would exist through handling of species during translocation and the possibility of not detecting all individuals prior to construction activities. Because tortoise clearance surveys would be conducted prior to ground-disturbance activities, a majority of the take of adult and juvenile tortoises would be in the form of collect, i.e., capture with subsequent removal to the DTCC or CSCC. However, some tortoises would undoubtedly be missed during clearance surveys, especially juveniles which are more difficult to detect, and/or others may wander unnoticed onto the construction site subsequent to surveys, resulting in injury or death. Thus, it is anticipated that some number of tortoises would be accidentally injured or killed as a result of project-related activities within or adjacent to the project area, but that this number is not quantifiable and depends largely on clearance survey methodology and the use of conservation measures to prevent and/or detect tortoises re-entering previously surveyed areas.

No direct effects would occur to Moapa dace and Virgin River chub, as they do not occur within the Development Area.

INDIRECT EFFECTS

Indirect effects from community development may include roadway mortality, habitat fragmentation, trash disposal, pets, increases in natural predators, illegal collection, disease, increased mortality or harm due to toxicosis, reduction in habitat and forage quality, increase in fire frequency and intensity, and increased mortality or injury due to vandalism. Due to indirect effects arising from increased human presence, conversion of the land to developed land uses in the Development Area could adversely impact desert tortoise and critical habitat adjacent to the Development Area and the CSICL. Increased human presence in the CSICL from increased recreational demand could also adversely impact desert tortoise and critical habitat in the CSICL. The extent of critical habitat surrounding the Development Area in BLM ACECs and USFWS refuges that may be affected by indirect effects is not quantifiable. It should be noted that the adjacent lands are managed by BLM as ACECs and USFWS as refuges and, therefore, are subject to activity restrictions. However, outside of these more rigidly protected lands are areas that have little to no restrictions in place, indirect effects from the community may be more widely observed. Within 65 miles (approximately a one hour drive) of the project area, there exist large expanses of BLM and USFS lands that are available for OHV use. If desert tortoises were to occur in these areas, which do not include critical habitat, the potential for direct mortality or injury would exist.

Roads, including U.S. Highway 93 and State Route 168, the main roads along the edge the project area, may also result in many indirect impacts to tortoise populations by increasing opportunities for human access, such as the collection (poaching) of tortoises for pets, food, or sport; release of diseased, captive tortoises into wild populations and the subsequent spread of disease; littering and illegal dumping; increased chance and incidence of human-caused fire in tortoise habitat; and the spread of non-native, invasive weeds (Boarman 2002).

Noise from traffic may also negatively affect tortoise populations due to disruption of communication, change in behavior, and damage to the auditory system. Background noise has been shown to mask vocal signals essential for individual survival and reproductive success in other animals (e.g., Bailey and Morris 1986; Ehret and Gerhardt 1980). Desert tortoises are known to have hierarchical social interactions (Brattstrom 1974), are capable of hearing (Adrian et al. 1938; Patterson, 1971, 1976), and communicate vocally (Campbell and Evans 1967; Patterson, 1971, 1976). The masking effect of these sounds may significantly alter an individual's ability to effectively communicate or to respond in appropriate ways. The same holds true for incidental sounds made by approaching predators; masking of these sounds may reduce a desert tortoise's ability to avoid capture by a predator.

Habitat fragmentation from development likely would impede movement of desert tortoise through the Development Area. However, habitat fragmentation would be minimized through the land reconfiguration process, as the ACECs established for desert tortoise conservation would remain adjacent to undeveloped lands

(the CSICL). The development area as it is proposed to be located in both the preferred alternative and Alternative 1 is along the only two paved roads in the Coyote Spring Valley: U.S. Highway 93 and State Route 168, which already fragment desert tortoise habitat. By locating the development area adjacent to the existing sources of habitat fragmentation, instead of being surrounded by undeveloped lands on all sides, both of the action alternatives would minimize the overall effect of habitat fragmentation from the project.

Habitat fragmentation is a major contributor to population declines of the desert tortoise (Berry 1984b, Berry and Burge 1984, Berry and Nicholson 1984b, Berry 1984c). An individual desert tortoise may require more than 1.5 square miles of habitat and may make forays of more than seven miles at a time (Berry 1986). In drought years, desert tortoise forage over even larger areas. Roads and urban areas form barriers to movement and tend to create small, local populations which are more susceptible to extinction than large, connected ones (Wilcox and Murphy 1985).

Trash disposal in the Development Area could adversely affect nearby desert tortoises. Unauthorized and authorized deposition of refuse occurs close to towns, cities, and settlements in remote, inaccessible areas. Tortoises are known to eat foreign objects, such as rocks, balloons, plastic, and other garbage (John Behler, Chairman of the Freshwater Turtle and Tortoise Group, Species Survival Commission, International Union for the Conservation of Nature, and New York Zoological Society, pers. comm.; Karen Bjorndabl, pers. comm. as cited in the Desert Tortoise Recovery Plan; USFWS 1994). Such objects can become lodged in the gastrointestinal tract or entangle heads and legs, causing death. Objects such as metal foil and glass chips have been found in wild desert tortoise scat, and tortoise entanglement with rubber bands and string has been observed Burge (1989).

The number of dogs will likely increase with an increase in human presence. The incidence of unrestrained domestic and/or feral dogs in tortoise habitat in and adjacent to the Development Area may subsequently increase. Dog attack or predation on tortoises has been identified by the USFWS as an emerging problem that warrants attention (59 FR 5820, Boarman 2002). Preliminary results from a study in the Mojave Desert of California indicate a significantly higher percentage of tortoises with moderate to severe canid-like shell trauma within approximately two miles of settlements than tortoises at more remote sites (Demmon and Berry 2005). Others have also reported high incidence of canid-like shell damage at sites with feral dogs and dog packs (Bjurlin and Bissonette 2001, cited in Boarman 2002).

Anticipated increases in human use and habitation of the Development Area may attract and concentrate predators such as ravens, coyotes, and kit fox, resulting in increased predation of desert tortoises. Predators are more likely to be attracted to the area if trash or other human-derived resources are present. Natural predation in undisturbed, healthy ecosystems is generally not a threat to the continued existence of the desert tortoise. However, predation rates may be altered when natural habitats are disturbed or modified.

The most important predators of desert tortoises at this time are the common raven (*Corvus corax*) and the coyote (*Canis latrans*). The best-documented predator is the raven. Raven population increases seem to be due to increased food supplies, (e.g., road kills, landfills, trash, garbage dumps, agricultural developments). Because ravens make frequent use of food, water, and nest-site subsidies provided by humans, their population increases have been tied to an increase in food and water sources, such as landfills and septic ponds (Boarman 1992, Boarman and Berry 1995, USFWS 1994). Additionally, new sites for perches and nests (e.g., fence posts, power poles and towers, signs, buildings, bridges) may increase potential mortality of tortoises due to increased foraging advantages.

The collection of desert tortoises for pets, food, or use in cultural observances may increase on lands adjacent to and within the Development Area. Illegal collection is a major factor in the decline of the desert tortoise. People illegally collect desert tortoise for pets, food, and commercial trade. Some collect for medicinal or other cultural purposes (USFWS 1994). Almost one-half of all tortoises with radio transmitters have been documented as poached or suspected of being poached from research sites (Berry 1990 as amended, Stewart 1991).

Pet tortoises, both desert and exotic, kept by future residents of the CSI planned community may also be intentionally or unintentionally released into surrounding areas. Well-meaning citizens may capture, transport, and release tortoises they find and perceive to be in harm’s way. In addition to loss through capture, increased handling could contribute to the loss of unique, local characteristics through interbreeding and genetic mixing.

Upper respiratory diseases in wild tortoises living in and near the Development Area could increase. Capture and release of tortoises could contribute to the spread of diseases such as upper respiratory tract disease (URTD). By the early 1990s, NDOW had documented several cases of URTD in tortoises inhabiting the areas proposed for inclusion in the Coyote Spring and Mormon Mesa DWMAs (USFWS 1994), and URTD has been documented in both the Coyote Springs and Mormon Mesa permanent study plots (BLM 1998). URTD appears to be spreading and may have been introduced to wild tortoise populations through the release or escape of diseased, captive tortoises (Jacobson 1994, as cited in USFWS 1994), something that is more likely to occur near an urban area (Boarman 2002). A high or increased prevalence of URTD in tortoise populations adjacent to urbanized areas or within suburban areas has been documented in several regions (Brown et al. 2005, Jones et al. 2005), although a direct cause-effect relationship has not been established (Boarman 2002). Pet desert tortoises would not be allowed in the Development Area and this may help to minimize this potential effect.

Evidence is mounting that desert tortoises are experiencing toxic effects and higher rates of mortality from one or more elements or compounds, such as selenium, heavy metals, chlorinated hydrocarbons, organophosphates, as well as nitro compounds and alkaloids in plants. In some cases, such chemicals occur naturally or result from distribution or concentration through human-induced activities (USFWS 1994). While research on the aforementioned subjects in desert tortoises is in preliminary stages, existing data are sufficient to suggest that these sources of mortality may be important, especially when coupled with drought.

Development activities that create ground disturbance could cause increases in non-native plants. Non-native plant species such as red brome (*Bromus rubens*), filaree (*Erodium cicutarium*), and split grass (*Schismus arabicus*) have been introduced as a result of grazing and increased due to disturbance by OHV and ground disturbance associated with development. These species have become widely established in the Mojave Desert. Land managers and field scientists identified 116 species of alien plants in the Mojave and Colorado deserts (Brooks and Esque 2002). Desert tortoises have been found to prefer native vegetation over aliens (Jennings 1993). Alien annual plants in desert tortoise critical habitat in the western Mojave Desert were found to compose greater than 60 percent of the annual biomass (Brooks 1998). The reduction in quantity and quality of forage may stress tortoises and make them more susceptible to drought- and disease-related mortality (Jacobson et al. 1991; Brown et al. 1994).

The proliferation of non-native plant species has also contributed to an increase in fire frequency in desert tortoise habitat by providing sufficient fuel to carry fires, especially in the intershrub spaces that are mostly devoid of native vegetation (USFWS 1994; Brooks 1998; Brown and Minnich 1986). Indeed, over 500,000 acres of desert lands burned in the Mojave Desert in the 1980s.

Changes in plant communities caused by recurrent fire may negatively impact tortoises and tortoise populations through direct mortality and injury, (e.g., Woodbury and Hardy 1948) as well as loss of forage species and shrubs that provide shelter and fragmentation of habitat (Brooks and Esque 2002, Esque et al. 2003).

Creosote bush is slow to re-sprout and germinate following intense fire (Brown and Minnich 1986). Loss of these shrubs and other vegetation, even temporarily, may change the thermal environment and increase exposure of tortoises to temperature extremes (Esque and Schwalbe 2002). Loss of forage, water, or shelter sites can result in nutritional deficiencies and decreased reproductive rates.

Shooting and vandalism play a major role in losses of desert tortoises in many areas, particularly where human visitation is high (measured in visitor-use days/unit area per year). These effects could occur in the planned community within the Development Area and in nearby areas. Deliberate shooting of desert tortoises or crushing them with vehicles has been documented (Berry 1986, Berry and Nicholson 1984; Michael Coffeen, BLM, Glenallen, Alaska, pers. comm., as cited in USFWS 1994). Acts of vandalism have also included beheading, severing of body parts, and overturning. Potential indirect effects to the banded Gila monster from land development activities are similar to some of those described in detail for the desert tortoise: habitat fragmentation, roads, illegal collection, and pets.

With residential and recreational development, altered habitat in the Development Area and BLM utility corridor may provide benefits and risks for the western burrowing owl. Nesting and fledgling successes were greater in urban than rural environments in a New Mexico Study (Botelho and Arrowood 1996, as cited in

Chase and Walsh 2004). However, burrowing owls associated with human habitation may also suffer higher mortality rates (Haug 1985, Millsap and Bear 1988, and Haug et al. 1993, as cited in McDonald et al. 2004). Adverse effects associated with urban and suburban environments can result from habitat loss, vehicular traffic, increased road densities, and negative edge effects from fragmentation (McDonald et al. 2004). Habitat loss from urban and agricultural development is considered a dominant factor in burrowing owl population declines (DeSante and Ruhlen 1995, Trulio 1995, and Trulio 1997, as cited in McDonald et al. 2004).

Indirect effects of community development and construction activities (habitat fragmentation, trash disposal, pets, increased natural predators, illegal collection, disease, toxicosis, nonnative plants, increased fire frequency, vandalism, increased road mortality) on desert tortoise, banded Gila monster, and western burrowing owl would be offset by the implementation of conservation measures such as fencing and construction BMPs. Fencing would reduce the potential for road mortality for desert tortoise and banded Gila monster, although it would not minimize potential effects of increased traffic for western burrowing owl. Habitat fragmentation and resulting dispersal barriers would be avoided and minimized by the land configuration selected. Trash disposal would occur within the fenced Development Area, be contained by adequate trash receptacles, and would be removed to landfills outside of the project area. Disease transfer of desert tortoise would be limited by education programs, regulations preventing owning desert tortoises as pets within the Development Area, and fencing of the Development Area, which would lead to reduced contact of tortoises with humans. Construction activity footprints would be minimized, and unnecessary disturbances avoided through BMPs, to reduce impacts to habitat and the potential for non-native plants to be introduced to the area and/or expand their ranges. Following BMPs to reduce the potential for pollutants to enter the environment would also reduce the potential for toxicosis in the desert tortoise. The potential for increased fire frequency and non-native plants would be reduced through fire conservation measures and a weed management plan. These actions would also reduce the numbers of existing non-native plants and their potential for spreading outside of the Development Area. Illegal collection and vandalism of the covered species would be minimized through enforcement of the CCRs. Light pollution could potentially affect these species, although CCRs would minimize any potential effects. Increased short-term and long-term noise levels could adversely affect these species, but each of these species (desert tortoise, banded Gila monster, and western burrowing owl) is known to use habitats adjacent to or within modified human environments, where noise levels are elevated. The potential for toxic effects exists from accidental spills and use of toxic materials in the project area for construction and industrial activities; however, as described in the Hazardous Materials section, the potential for toxic materials to enter the environment would be minimized through adhering to state and federal regulations.

Overall, these conservation measures would reduce indirect effects to desert tortoise, banded Gila monster, and western burrowing owl. Adaptive management and monitoring would ensure conservation measures are adequate to protect the desert tortoise, banded Gila monster, and western burrowing owl. Additional conservation measures may be implemented to ensure that these species are fully protected.

Activities related to community development and construction, recreational facilities and open space, utility infrastructure, water supply infrastructure and management, flood control and stormwater management, and construction of the resource management features are not anticipated to have a detectable impact on Moapa dace and Virgin River chub due to the nature or location of the activities, as habitat for both of these aquatic species is located approximately 17 miles downstream of the Development Area (see Figure 4-3). Both off- and on-site ephemeral surface flows would be managed within the Development Area to minimize effects to the quality and quantity of water entering the Pahranagat Wash incised ephemeral channel and downstream sites. The stormwater detention basins and other flood management activities would help minimize potential effects to the Pahranagat Wash incised ephemeral channel and downstream sites from increased stormwater runoff volumes and peak flow rates that likely would accompany urban development. With these facilities in place, stormwater flows that enter the Muddy River from the Development Area would not exceed current conditions. Furthermore, continuous flow in the Pahranagat Wash incised ephemeral channel between the Development Area to the Muddy River only occurs during major storm events (100-year or greater). Implementation of avoidance and minimization measures would reduce any potential indirect effects (such as increased sedimentation) of the Covered Activities on Moapa dace and Virgin River chub habitat to undetectable levels.

Therefore, the combination of all activities and conservation measures should result in no detectable effect to the Moapa dace, Virgin River chub, or their habitats. Furthermore, the funds generated from the development fees collected to mitigate for impacts to desert tortoise and potential banded Gila monster habitat would be used to implement a variety of mitigation measures that could benefit the aquatic fish species as well.

EVALUATION SPECIES

DIRECT EFFECTS

Direct effects from community development may include loss or disturbance of habitat and direct mortality to evaluation species in 20,716 acres in the Development Area and up to 244 acres in the BLM utility corridor. Some lands within the CSICL would be affected from construction of a tortoise collection and rearing facility, trails, educational kiosks, and restored WOUS; however, locations of these areas could be shifted to minimize effects to specific habitats.

Three-corner milkvetch and sticky buckwheat occurs in Mojave desert and Creosote bush scrub communities on deep sand or sand dunes. Therefore, developing Mojave Desert scrub habitat in the Development Area and BLM utility corridor could potentially result in the loss of one or more populations of this species, although no three-corner milkvetch or sticky buckwheat were observed in the Development Area during past surveys. Las Vegas buckwheat could be affected if its habitat occurs within the Development Area and is developed. However, no individuals from these three species were observed in the project area in recent surveys (RCI 2006), and no suitable habitat is known to occur in the area.

Surveys would monitor these species, and mitigation measures for Covered Species would provide benefits to all three evaluation species with the potential to occur in the project area, through protection of 737.7 acres of undisturbed upland buffer habitat and 13,767 acres of land in the CSICL.

Each of these species' populations also extends broadly throughout Coyote Spring Valley and federally protected lands within nearby ACECs, wilderness areas, and wildlife refuges. Because activities under the Preferred Alternative would not adversely affect Evaluation Species at a population level, any direct adverse effects to Evaluation Species under the Preferred Alternative would not be considered significant.

INDIRECT EFFECTS

Indirect effects as a result of community development consist of higher mortality rates due to habitat loss, vehicular traffic, increased road densities, and habitat fragmentation. These indirect effects arising from increased human presence may also negatively affect habitat adjacent to the Development Area. Conservation measures developed for desert tortoise, banded Gila monster, and western burrowing owl would offset many of these effects by protecting habitat within the CSICL and by reconfiguring the land to minimize habitat fragmentation.

Each of these species' populations also extends broadly throughout Coyote Spring Valley and includes federally protected lands within nearby ACECs, wilderness areas, and wildlife refuges. Because activities under the Preferred Alternative would not adversely affect Evaluation Species at a population level, any direct adverse effects to Evaluation Species under the Preferred Alternative would not be considered significant.

Indirect effects from increased sedimentation could also occur downstream of the project area in the Muddy River. Best management practices and a stormwater management plan would ensure that sediment from the Development Area does not affect aquatic habitat downstream in the Muddy River and the Muddy and Warm Springs area. Therefore, no effects to Moapa White River springfish, relict leopard frog, southwestern willow flycatcher, yellow-billed cuckoo, or Yuma clapper rail would be expected. Light pollution could potentially affect the bird species that are considered evaluation species, although CCRs would minimize any potential effects. Increased short-term and long-term noise levels could adversely affect species that are unadapted to human environments. The potential for toxic effects exists from accidental spills and use of toxic materials in the project area for construction and industrial activities; however, as described in the Hazardous Materials section, the potential for toxic materials to enter the environment would be minimized through adhering to state and federal regulations.

WATCH LIST SPECIES

DIRECT EFFECTS

Numerous special status species of snakes and lizards present within the Development Area and BLM utility corridor would likely be killed as ground-clearing activities proceed. If the phainopepla is present during ground-clearing activities, it could fly off but any active nests would be lost. Because the majority of acacia and mesquite in the project area occur along the Pahranagat Wash incised ephemeral channel, which would be protected by a perpetual conservation easement, no long-term effects to phainopepla would occur. Kit foxes would also be able to avoid the area during ground-clearing activities. Watch List plant species have been surveyed within the project area and are not known to be present. Because some of these plants may be detectable only during years with high precipitation, there is the possibility that populations do occur within the project area and could be lost during ground-clearing activities in the Development Area and the BLM utility corridor. Some lands within the CSICL would be affected from construction of a tortoise collection and rearing facility, trails, educational kiosks, and restored WOUS; however, locations of these areas could be shifted to minimize effects to specific habitats.

Each of these species' populations also extends broadly throughout Coyote Spring Valley and federally protected lands within nearby ACECs, wilderness areas, and wildlife refuges. Because activities under the Preferred Alternative would not adversely affect Watch List Species at a population level, any direct adverse effects to Watch List Species under the Preferred Alternative would not be considered significant.

INDIRECT EFFECTS

Increased mortality of special status snakes, lizards, and the kit fox would be expected as a result of increased traffic on State Route 168 and U.S. Highway 93. Each of these species' populations also extends broadly throughout Coyote Spring Valley and federally protected lands within nearby ACECs, wilderness areas, and wildlife refuges. Because activities under the Preferred Alternative would not adversely affect Watch List Species at a population level, any indirect adverse effects to Watch List Species under the Preferred Alternative would not be considered significant. Light pollution could potentially affect these species, although CCRs would minimize any potential effects. Increased short-term and long-term noise levels could adversely affect species that are unadapted to human environments. The potential for toxic effects exists from accidental spills and use of toxic materials in the project area for construction and industrial activities; however, as described in the Hazardous Materials section, the potential for toxic materials to enter the environment would be minimized through adhering to state and federal regulations.

5.2.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

5.2.2.3.1 Vegetation

DIRECT EFFECTS

Direct effects would be similar to those described for the Preferred Alternative, except the loss of existing vegetation would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. No benefits from adding lands to the CSICL would occur, as these lands could potentially be developed according to the Land Lease Agreement. Within the private lands, 320.6 acres of upland buffer habitat would be protected after a potential initial disturbance for the restoration of WOUS, trail building, etc. (see Table 3-13). This upland buffer would continue to provide habitat for existing native vegetation.

Overall, potential vegetation lost as a result of development activities in the project area would be a small portion of total vegetation available within Lincoln County. Sensitive vegetation areas would be avoided, with only minimal effects to these areas from flood control measures. Effects to vegetation would be unlikely to affect the viability of plant communities in the localized area, given that the desert shrub and badland communities within the Development Area are ubiquitous in the region and CSI would be preserving native seeds and individual plants in order to maintain genetic stock for restoration and revegetation efforts. For these

reasons, direct adverse effects to vegetation under Alternative 1 would not be considered significant, although adverse effects would be noticeably greater than under the Preferred Alternative.

INDIRECT EFFECTS

Indirect effects to vegetation would be similar to those described for the Preferred Alternative (change in species composition along outside of Development Area, potential for invasive species to establish themselves within the Development Area), although the extent of the effects would be greater, due to increased lands being developed under Alternative 1.

5.2.2.3.2 Wildlife

AQUATIC SPECIES

DIRECT EFFECTS

Effects would be similar in nature to those described for the Preferred Alternative, although a larger amount of land would be impacted, as roads and other development could occur on the lease lands. In addition, the magnitude of effects would be greater. Activities would affect 27.8 acres of WOUS (aquatic habitat) within the Development Area and BLM utility corridor, a greater number than under the Preferred Alternative and a slightly smaller amount of buffers surrounding designated WOUS would be protected in a conservation easement. In addition, a greater number of restored WOUS would need to be created as compared to the Preferred Alternative (69.8 acres instead of 63.4). The increased residential density would also result in decreased infiltration rates, but the flood control measures installed would ensure no greater amount of stormwaters would leave the CSI Development Area than enter the area.

INDIRECT EFFECTS

Indirect effects would be similar to those described for the Preferred Alternative, as conservation measures identified for WOUS and flood control measures would minimize any potential downstream effects.

TERRESTRIAL SPECIES

DIRECT EFFECTS

Non-special status terrestrial species that depend on this habitat may be displaced or lost on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor, greater than what would occur under the Preferred Alternative. A Perpetual Conservation Easement Grant would protect 437.2 acres of preserved and restored WOUS and upland buffer habitat surrounding the preserved WOUS, which would maintain these areas as wildlife habitat after initial disturbance. Fencing would limit the area as habitat for reptiles and small mammals that could not cross through the fence, while larger mammals such as desert bighorn sheep could move through or cross over the low fencing for desert tortoise. Generalist species, such as some species of birds and small mammals that can also use suburban and urban habitats, would be less affected than species that require undisturbed creosote-bursage scrub habitats. Overall, the effects of these actions would be long term and adverse.

Mitigation measures as a component of Alternative 1 would result in funding of additional recovery efforts outside of the project area. Associated improvements to upland habitat from addressing fire frequency and invasive species management would improve habitat for non-special status wildlife species that would occur in habitats where desert tortoise can be found. These could include ground squirrels, desert pocket mouse, jackrabbits, snakes, chuckwalla, lizards, and ground-dwelling bird species such as Gambel's quail.

The large size of ACECs with creosote-bursage scrub habitat surrounding the CSI lands in Lincoln County would ensure that wildlife populations in the local area would remain viable over the long-term. For these reasons, conversion of 21,087 acres of CSI private land and 7,548 acres of lease land into a planned town with associated infrastructure, along with up to 244 acres of detention basins in the BLM utility corridor, would be unlikely to result in significant effects to non-special status terrestrial wildlife species and their habitats,

although the resulting adverse effects to non-special status wildlife would be higher than described for the Preferred Alternative.

MIGRATORY BIRDS

As described for the Preferred Alternative, mitigation measures would avoid effects to migratory birds.

INDIRECT EFFECTS

Indirect effects would be similar to those described for wildlife under the Preferred Alternative, although traffic levels and subsequent rates of mortality would be higher due to a larger number of residents.

As described for the Preferred Alternative, the urbanization of the area could encourage urban wildlife species such as house sparrows, starlings, and raccoons to inhabit the area. Avoidance and minimization measures would minimize accessible food sources, such as trash, that could encourage some urban wildlife species that predate upon native wildlife that would remain in the Development Area or occur nearby.

5.2.2.3.3 Special Status Species

COVERED SPECIES

DIRECT EFFECTS

Direct effects to the desert tortoise, banded Gila monster, and western burrowing owl would be similar to those described for the Preferred Alternative, although the magnitude of habitat loss and other effects would be larger, given that the effects from Covered Activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. Easements on designated WOUS and surrounding buffer habitat would protect 344.8 acres of upland buffer habitat adjacent to existing, preserved WOUS and 92.3 acres of restored and preserved WOUS within the CSI private lands in Lincoln County (see Table 3-13). The land configuration under Alternative 1 would include the Kane Springs Road through the lands to be protected in the CSICL, which would result in habitat fragmentation and the potential for vehicle mortality for desert tortoise, banded Gila monster, and western burrowing owl.

Less monitoring information on desert tortoise, banded Gila monster, and western burrowing owl would be available under this alternative, as all private lands would immediately be built out upon project implementation. This would result in less information gathered on the populations in and around the Coyote Spring Valley, which could result in less informed management decisions for future activities and management of these species.

INDIRECT EFFECTS

Indirect effects to desert tortoise, banded Gila monster, Moapa dace, and Virgin River chub would be similar to those described for the Preferred Alternative, although the magnitude of the effects would be larger, at least for desert tortoise, banded Gila monster, and western burrowing owl, given that the effects from these activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor.

EVALUATION SPECIES

DIRECT EFFECTS

Direct effects to the Evaluation Species (Moapa White River springfish, relict leopard frog, southwestern willow flycatcher, Yuma clapper rail) would be similar to those described for the Preferred Alternative, although the magnitude of habitat loss and other effects could be larger, given that the effects would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. Easements on designated WOUS and surrounding buffer habitat would protect 344.8 acres of upland habitat adjacent to existing WOUS and 92.3 acres of existing and restored WOUS within the CSI private lands in Lincoln County (see Table 3-13).

Less monitoring information on Evaluation Species would be available under this alternative, as all private lands would immediately be built out upon project implementation. This would result in less information gathered on the populations in and around the Coyote Spring Valley, which could result in less informed management decisions for future activities and management of these species.

INDIRECT EFFECTS

Indirect effects would be similar to those described for the Preferred Alternative, although the magnitude of the effects could be larger, given that the effects would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor.

WATCH LIST SPECIES

DIRECT EFFECTS

Direct effects to the Watch List Species would be similar to those described for the Preferred Alternative, although the magnitude of habitat loss and other effects could be larger, given that the effects would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. Easements on designated WOUS and surrounding buffer habitat would protect 344.8 acres of upland habitat adjacent to existing WOUS and 92.3 acres of existing and restored WOUS within the CSI private lands in Lincoln County (see Table 3-13).

INDIRECT EFFECTS

Indirect effects would be similar to those described for the Preferred Alternative, although the magnitude of the effects could be larger, given that the activities would occur across a greater area.

5.3 WATERS OF THE UNITED STATES

5.3.1 Evaluation Criteria

EPA's Guidelines at 40 CFR Subsection 230.10(c) require a finding that the Preferred Alternative will not cause or contribute to significant degradation of WOUS. Findings of significant degradation related to the proposed discharge are to be based upon appropriate factual determinations and evaluations. There is no generally accepted approach for evaluating the functions/values of desert dry washes. The Corps' Descriptive Approach for evaluating the functions/values of wetlands is a flexible approach that examines many of the functions/values outlined in EPA's Guidelines and the Corps' regulations. It follows a three-step process:

- Complete a brief description of the physical characteristics of the aquatic environment being evaluated;
- List the functions/values exhibited; and
- Provide a rationale for the conclusions.

This approach was used in this analysis to evaluate the functions/values potentially associated with the dry washes at the site. It provides a framework for evaluating whether the areas where impacts will occur are providing the functions/values of concern, which allows a more informed evaluation of whether significant degradation of those functions/values is likely to occur at the local or regional level if the Preferred Alternative is permitted.

Residential and non-residential development within the 100-year floodplain will only occur in Floodway Fringe locations in accordance with FEMA Standards. All onsite facilities and development will be constructed as required to reduce runoff in a manner consistent with FEMA regulations and standards developed by CSI and Lincoln County.

5.3.2 Comparative Analysis of Alternatives

5.3.2.1 No Action Alternative

DIRECT EFFECTS

Under the No Action Alternative, Section 404 and incidental take permits would not be issued to CSI for development of the master planned community. No direct effects to WOUS would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. These individual landowners would conduct development on a parcel-by-parcel basis, which could potentially result in development affecting WOUS associated with the Pahranagat Wash incised ephemeral channel. Lands leased by CSI could be developed for roads or utilities, which also could result in effects to WOUS. Individual landowners would be responsible for negotiating mitigation with the Corps.

INDIRECT EFFECTS

No indirect effects to WOUS would occur. As a result of choosing the No Action Alternative, CSI could sell their lands in Lincoln County to individual landowners. If individual landowners were to develop up to 21,454 acres of private lands, then a lack of coordination with regards to stormwater management could result in adverse effects to WOUS.

5.3.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

Modification of some WOUS would be needed to comply with Lincoln County flood control requirements. The desert dry washes in their current form do not have the capacity to convey floodwaters through the Development Area without significant negative impacts related to erosion and sedimentation within the Pahranagat Wash incised ephemeral channel and potentially further down-gradient, in addition to endangering the health, safety, and welfare of community's residents. Erosion within dry washes can begin to occur at velocities of five to 10 feet per second without sufficient erosion control measures in place. Current volumes are consistently over 500 cfs and gradually combine to form larger flows at higher velocities through the Development Area before they reach the Pahranagat Wash incised ephemeral channel (ENTRIX et al. 2005). During major storms, large amounts of erosion will occur to existing washes causing sedimentation further down-gradient unless the flood conveyance facilities are enlarged and reinforced where necessary with sufficient erosion control measures to meet acceptable flood conditions. For this reason, modification of some WOUS within the Development Area and BLM utility corridor would be necessary (Table 5-1).

Table 5-1 Proposed Modifications and Conservation Measures to WOUS Under the Preferred Alternative

	Development Area	BLM Utility Corridor	Lincoln County Lease Lands (CSICL)	Total
Potentially disturbed WOUS	28.2	5.1	0	31.7
Avoided WOUS	25.2	0	6.9	32.1
Total Existing WOUS	**51.8**	**5.1**	**6.9**	**63.8**
Restored WOUS	59.8	0	3.6	63.4
Avoided WOUS protected in an easement or conservation lands	25.2	0	6.9	32.1
Total WOUS protected in an easement or conservation lands	**85.1**	**0**	**10.5[a]**	**95.6**

Table 5-1 Proposed Modifications and Conservation Measures to WOUS Under the Preferred Alternative

	Development Area	BLM Utility Corridor	Lincoln County Lease Lands (CSICL)	Total
Upland buffer habitat for preserved, existing WOUS (100 ft. on each side)	712.5	0	0[b]	712.5
Upland buffer habitat for preserved WOUS (30 ft. on each side)	67.4	0	0[b]	67.4
Total Upland Buffer Habitat for preserved WOUS	**779.9**	**0**	**0[b]**	**779.9**
Total acreage in Perpetual Conservation Easement Grant or Drainage and Maintenance Easement (protected, avoided WOUS; restored WOUS, upland buffer habitat)	**864.8**	**0**	**0**	**864.8**

[a]located within CSICL

[b]located within areas where preserved and restored WOUS and surrounding upland habitat lands will be protected by the CSICL

As described above in Table 5-1, 31.7 acres of WOUS would be impacted in order to meet flood control standards when constructing the CSI Development under the Preferred Alternative. Impacts to 25.2 acres of WOUS in the Development Area and BLM utility corridor would be avoided. Within the CSICL, all 6.9 acres of WOUS would be protected from future disturbances. An additional 59.8 acres of WOUS in the Development Area and 3.6 acres in the CSICL would be restored. The 59.8 restored acres and 25.2 acres of existing WOUS in the Development Area would be protected in a conservation easement, along with 334.1 acres of upland habitat that would provide a 100-foot buffer on each side of existing WOUS, including the Pahranagat Wash incised ephemeral channel, and a minimum range of 40 to 80-foot of buffer on each side of other desert dry washes within the Development Area. Preserving and restoring 95.6 acres of WOUS within the project area would serve as mitigation for impacting 31.7 acres of WOUS for flood control purposes.

Flood control measures developed under the Preferred Alternative include detention basins that would ensure that reduced infiltration rates as a result of the CSI Development and would not cause adverse effects to existing WOUS. In addition, providing for natural substrates along constructed washes rather than cement and pavement would retain the existing permeability with the potential to improve water runoff quality.

Project construction activities that would fill existing desert dry washes would cause aquatic habitat functions and values currently present in those washes to be lost. Restoration of desert dry washes as described in the Mitigation Plan (Appendix J) would at a minimum replace these functions and associated values lost as well as increase the areal extent of these habitats. Table 5-2 identifies aquatic habitat functions expected to result from implementation of the habitat restoration component of the Mitigation Plan. Similarly, Table 5-3 presents expected resulting values as the mitigation project becomes successful.

Table 5-2 Aquatic Habitat Functions to Result from Implementing the Habitat Restoration Component of the Mitigation Plan

WOUS	Preserved Desert Dry Washes	Restored Desert Dry Washes
Groundwater Recharge/Discharge	*Present*	*Present*
Flood Flow Alteration	*Present*	*Present*
Fish and Shellfish Habitat	*Not Present*	*Not Present*
Sediment, Toxicant, and/or Pathogen Retention	*Not Present*	*Not Present*
Nutrient Removal, Retention, and/or Transformation	*Present*	*Present*
Production Export	*Present*	*Present*
Sediment/Shoreline Stabilization	*Present*	*Present*
Wildlife Habitat	*Present*	*Present*

Table 5-3 Aquatic Habitat Values to Result from Implementing the Habitat Restoration Component of the Mitigation Plan

WOUS	Preserved Desert Dry Washes	Restored Desert Dry Washes
Recreation	*Present*	*Present*
Education/Scientific	*Present*	*Present*
Uniqueness/Heritage	*Present*	*Present*
Visual Quality/Aesthetics	*Present*	*Present*
Threatened or Endangered Species Habitat	*Present*	*Present*

Overall, the Preferred Alternative would ensure that the WOUS within the project area would be protected and/or restored. The addition of flood/stormwater detention ponds along with the larger constructed washes would expand wash habitat while enhancing flood control capacity. Implementation of the Mitigation Plan would result in positive direct effects to the environment, because restoration acreage would be approximately three times greater than affected acreage.

INDIRECT EFFECTS

Indirect effects to WOUS would not occur under the Preferred Alternative. All aquatic habitat values are expected to be restored as a result of implementing the mitigation plan.

5.3.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

5.3.2.3.1 Direct and Indirect Effects

Alternative 1 would produce greater adverse direct and indirect effects in comparison to the Preferred Alternative, because activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. A greater acreage of WOUS would be affected in the Development Area and the BLM utility corridor (27.8 acres) under Alternative 1 (Table 5-4). A reduced buffer width compared to the Preferred Alternative for protected, existing dry desert washes would not be as effective in limiting any potential effects to WOUS. Of the 63.8 acres of delineated WOUS in the Development Area and BLM utility corridor, 22.6 acres of WOUS would be avoided. A conservation easement totaling 437.2 acres would protect all avoided WOUS, all restored WOUS, and upland buffer habitat adjacent to existing, preserved WOUS within the Development Area. Activities occurring on the lease lands in Lincoln County in accordance with the Land Lease Agreement could result in additional adverse impacts to WOUS through the construction of road crossings and other activities.

Table 5-4 Proposed Modifications and Conservation Measures to WOUS Under Alternative 1

	Development Area	BLM utility corridor	Lincoln County Lease Lands	Total
Potentially disturbed WOUS	29.8	5.1	Up to 6.3	27.8 plus up to 6.1 on Lincoln County lease lands
Avoided WOUS	22.6	0	Up to 6.3	22.6 plus any avoided in Lincoln County lease lands
Total Existing WOUS	**51.8**	**5.1**	**6.3**	**63.8**
Restored WOUS	69.8	0	0	69.8
Avoided WOUS also protected in an easement	22.6	0	0	22.6
Restored WOUS also protected in an easement	69.8	0	0	69.8
Total WOUS protected in an easement	**92.3**	**0**	**0**	**92.3**
Upland Buffer Habitat for preserved, existing WOUS (100 ft on each side)	174.3	0	0	174.3
Upland Buffer Habitat for preserved, existing WOUS (30 ft on each side)	170.5	0	0	170.5
Total upland buffer habitat	**344.8**	**0**	**0**	**344.8**
Total acreage in Perpetual Conservation Easement Grant or Drainage and Maintenance Easement (protected, avoided WOUS, restored WOUS, upland buffer habitat)	**437.2**	**0**	**0**	**437.2**

5.4 HYDROLOGY AND WATER QUALITY

5.4.1 Evaluation Criteria

5.4.1.1 Surface Water

CSI and Lincoln County will develop (in accordance with NRS 244.157) and implement standards consistent with CCRFCD's policies, because Lincoln County does not have a flood control district. For this analysis, effects of stormwater will be analyzed in comparison with the CCRFCD's policies, adopted pursuant to NRS 543.340(4) Section 300 of the CCRFCD Drainage Design Manual (CCRFCD 1999) contains numerous policies that apply to the Preferred Alternative, including stormwater drainage systems, reasonable uses of drainages, regional master planning, drainage improvements and floodplain management. Measurable criteria are described below:

- **302.1 Stormwater Drainage System:** The policy of the CCRFCD shall be to consider stormwater drainage an integral part of the overall urban system and require storm drainage planning for all developments to include the allocation of space for drainage facility construction and maintenance which may entail the dedication of right-of-way and/or easements.
- **303.1.1 Increase in Rate of Flow:** The policy of the CCRFCD shall be to minimize the increase in the rate of flow from developing properties unless downstream facilities exist to accommodate the increased flow rates.
- **303.1.2 Change in Manner of Flow:** The policy of the CCRFCD shall be to require that point flows be discharged to downstream properties at non-erosive velocities and depths of flow.

The CCRFCD requires all development to include the planning, design, and construction of drainage facilities for both the minor (10-year recurrence interval) and major (100-year recurrence interval) storm events. The CCRFCD requires that all drainage plans, studies, and construction drawings and specifications be reviewed for approval or modification.

5.4.1.1.1 Groundwater

Depth to groundwater beneath the Development Area is over 400 feet (Johnson 2005), and there are no data that suggest surface water and groundwater interact beneath the Development Area.

5.4.1.1.2 Water Quality

The EPA and the Corps are responsible for administration of the CWA, which established the NPDES permit program and the Section 404 permit program. NDEP has been delegated the authority to administer the NPDES permit program in Nevada.

In addition to administering the NPDES program, NDEP also regulates the discharge of pollutants to the groundwaters of the State of Nevada. Regulatory permits that regulate temporary construction activities and long-term operation of the improvements required to control the discharge of pollutants and protect surface waters are described below:

- Temporary Work in Waterways Permit: This project-specific permit is required for construction activities in and along waterways. The permit requires construction to be implemented in a manner to preserve water quality, control erosion and sedimentation, stabilize channel banks, restore riparian vegetation, and manage project dewatering during construction.
- Stormwater General Permit NVR 100000: This permit applies to construction activities and industrial activities such as temporary concrete, asphalt and material plants associated with the construction project. Permit conditions require preparation of a SWPPP that identifies potential sources of pollution, specifies temporary and permanent measures to prevent erosion, minimize sediment transport, stabilize disturbed soils, and establishes methods to control hazardous materials and other waste.
- General Permit for Discharge from Small Municipal Separate Storm Sewer Systems, NVS 040000: This permit applies to small municipalities outside of urban areas with a population of at least 10,000. The regulations require a SMS 4 management program to address six program elements that, when implemented in concert, are expected to achieve a significant reduction of pollutants discharged to surface waters. The six elements are 1) public education, 2) public participation, 3) illicit discharge detection and elimination, 4) construction site runoff control, 5) post-construction runoff control, and 6) pollution prevention/good housekeeping.
- Under Sections 404 and 401 of the CWA, the Corps and/or the NDEP have jurisdiction over WOUS. Under the authority granted within Section 401 of the CWA, the NDEP Bureau of Water Quality Planning requires application for a Water Quality Certification concurrently with all Section 404 permits. Adoption of measures to protect water quality and minimize disturbance within WOUS constitute evaluation criteria.

The State of Nevada Administrative Code Section 445A.210 describes water quality standards for the Muddy River from the Glendale Bridge to the river source. NAC 445A.211 describes the water quality standards from Lake Mead to Glendale. Both reaches of the Muddy River have been placed on the Nevada 303(d) list for impaired waters. NAC 445A.210 (Source to Glendale) water quality is impaired for total iron, temperature, and total phosphorus. NAC 445A.211 (Glendale to Lake Mead) water quality is impaired for total boron, total iron and temperature.

5.4.2 Comparative Analysis of Alternatives

5.4.2.1 No Action Alternative

DIRECT EFFECTS

Under the No Action Alternative, Section 404 and incidental take permits would not be issued to CSI for the development of the master planned community. No direct effects to hydrology or water quality would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. These individual landowners would conduct development on a parcel-by-parcel basis, which could potentially result in development affecting surface water hydrology and water quality in the

Pahranagat Wash and other WOUS associated with the Pahranagat Wash incised ephemeral channel. Individual landowners would be responsible for negotiating mitigations with the Corps for Section 404 permits. Depending on their individual level of impacts, these permits may require associated mitigation measures to reduce any adverse effects to acceptable levels.

Groundwater could be affected if individual residences were established and domestic wells were installed. However, the amount removed for each residence would not require a permit from the State Engineer because of the small size of water removed (up to 2.0 afa). Domestic wells would be more likely to utilize the alluvial aquifer than the carbonate aquifer due to well depth and cost of accessing the aquifer. Therefore, effects to groundwater, if individual residences were to be developed and use domestic wells, would be expected to be minimal. However, if a large number of individual residences were developed (e.g., 10,000 residences), which would be unlikely given a lack of infrastructure, a potentially significant amount of water (e.g., 20,000 afa) could be removed from the alluvial aquifer.

INDIRECT EFFECTS

No indirect effects to hydrology or water quality would occur from the No Action Alternative.

As a result of choosing the No Action Alternative, CSI could sell their lands in Lincoln County to individual landowners. If development by individual landowners were to occur, a comprehensive planning process to address potential impacts to hydrology or water quality would not be implemented and could potentially result in greater levels of effects to WOUS than the Preferred Alternative. Under the Preferred Alternative, a comprehensive planning process was used to determine how to address stormwater management and resulting alteration of WOUS in the Development Area.

5.4.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

5.4.2.2.1 Hydrology

DIRECT EFFECTS

To control peak flood events, CSI proposes a series of stormwater detention basins situated west of U.S. Highway 93, which would drain into the Development Area and ultimately the Pahranagat Wash incised ephemeral channel. Constructed conveyance channels would also be created in the Development Area to address flood control in combination with these detention basins. Therefore, the hydrology of all the WOUS within the Development Area would be directly affected by the Preferred Alternative. The system of detention, conveyance and retention would be designed according to Lincoln County standards that would be consistent with the Clark County Drainage Design Manual.

Under the Preferred Alternative, approximately 31.7 acres of existing WOUS would be affected by project activities. An additional 32.1 acres would be avoided, and 63.4 acres would be created to address impacts to desert dry wash habitat function to include wildlife habitat and flood attenuation in combination with proposed detention basins west of U.S. Highway 93. These alterations to the structure of the existing WOUS and the addition of detention basins and additional conveyance channels would result in an alteration in the existing hydrology in the system. However, Pahranagat Wash, which conveys the waters out of the project area, and Kane Springs Wash, which contributes ephemeral flows to the Pahranagat Wash within the project area, would be protected with buffers along the banks.

Flood control operations inherent in the proposed alteration of washes, construction of bank stabilization structures, and construction of detention basins have the potential to alter streamflow and sediment transport. This in turn has the potential to result in alterations of channel morphology, including streambed and streambank stability, and maintenance of channel equilibrium conditions (i.e., channel aggradation or degradation).

Changes in hydrology to the Pahranagat Wash could occur from changes in the amount of sediment and flow contributed from the altered WOUS (i.e., affected and created) and the created detention basins. Design of the created WOUS and the potential fill of 31.7 acres of WOUS could reduce the amount of sediment that could be

transported into Pahranagat Wash. Flow patterns within the project area would also be changed, which could affect the hydrology of the Pahranagat Wash at a local level. Where a side channel enters the wash, scouring and deposition could shift locations and intensities. These effects would be considered adverse, but would not be significant due to the limited changes in hydrology anticipated within a system with very infrequent flows and because of project design, which include additional conveyance channels and detention basins to address the potential for large storm events. Furthermore, sediments are trapped before they reach the Muddy River due to the sediment trapping structures waters flowing down the Pahranagat Wash from the project area must pass through. These include a culvert located under Highway 168, a sedimentation basin located immediately south of Highway 168 and two dams designed to capture water for livestock (also trap sediments upgradient) which are located at the approximate entrance to Arrow Canyon.

Urbanization typically increases stormwater runoff volumes and peak flow rates. The proposed detention facilities and constructed conveyance channels would temporarily store stormwater runoff and limit peak runoff rates. By capturing flows in detention storage until they fill and spill, detention basins would control the magnitude and timing of downstream flow. The detention basins would be in an area where minimal disturbance would be required to remove excessive sediment to maintain the basins.

Considering the large size of the Pahranagat Wash watershed, local attenuation of the stormwater hydrograph would be observable for localized thunderstorms. Changes to the hydrograph during larger, regional storms would be imperceptible because of the relatively small contribution of the project area, including the drainages west of U.S. Highway 93. Up to eight detention basins, totaling up to 244 acres, may be constructed to attenuate flood flows through the Development Area. Stormwater captured in the detention basins upgradient of U.S. Highway 93 would be released into the constructed washes that flow through the development, emptying into the Pahranagat Wash incised ephemeral channel. Capturing stormwater runoff in detention storage until they fill and spill, the detention basins would spread the peak flows of storm events out over a longer period, thereby avoiding significant adverse impacts to the Pahranagat Wash incised ephemeral channel downstream. However, as described, negligible effects to the hydrograph would result from the project under the Preferred Alternative.

The new conveyance channels through the Development Area would be designed to accommodate the anticipated stormwater flows released from the detention basins following applicable standards. Therefore, the Preferred Alternative would also contribute slight positive direct effects to the hydrology of the WOUS within the Development Area by controlling flooding in the human environment.

Restoration of WOUS described in detail in the Mitigation Plan (Appendix J) could also result in improved hydrological conditions in the eastern portion of the project area by removing roadway fill material at over 30 former roadway drainage crossings which currently prevents stormwater flow from these blocked drainages to the Pahranagat Wash. This restoration could also contribute beneficial effects on hydrology under the Preferred Alternative by restoring historic flows from the desert dry washes on the eastern side of the Pahranagat Wash. Currently the cut off portions of the dry washes lack sufficient watershed to flow to the Pahranagat Wash, except for the most extreme rainfall events. Physical evidence (e.g., weathered rock) indicates that flows have not occurred within these blocked desert dry wash drainages for many decades.

If production wells were to be placed within the Development Area or the CSICL, groundwater from the Coyote Spring Valley basin would be removed according to water rights owned by CSI (2,600 afa) and the Clark County-Coyote Springs Water Resources General Improvement District (2,000 afa). However, this production would be subject to the Muddy River MOA (Appendix D), thus having trigger levels for groundwater pumped. Because triggers could reduce the amount of groundwater pumped and a percentage of CSI water rights (up to 460 afy) would be devoted to Moapa dace, adverse effects to groundwater would be avoided. No additional effect would occur, as this action has already been addressed in a previous environmental assessment (ENTRIX et al. 2005).

INDIRECT EFFECTS

No indirect effects to surface water would be expected from increases in impervious surfaces or flood control measures, as flood control measures would not detain peak flow waters, only retain them for short times to lower peak flow levels to existing levels.

Because of trigger levels in the Muddy River MOA, adverse effects to surface waters in the Muddy River potentially created by the use of production wells on CSICL lands would be avoided.

5.4.2.2.2 Water Quality

DIRECT EFFECTS

The potential for increased sedimentation and pollutants from heavy equipment would exist under the Preferred Alternative, as activities would include flood control measures in and along some of the existing WOUS. However, buffers along avoided WOUS and BMPs developed for general construction activities, as well as those associated with the Temporary Work in Waterways Permit, would reduce the potential for pollutants and sediment to enter WOUS in the project area during construction activities that would occur over the length of the 40-year project.

In the long-term, release of typical pollutants contained in stormwater runoff from urban streets and parking areas into surface waters, without implementation of BMPs, would directly impact WOUS. CSI has prepared a long-term, post-construction stormwater management plan for the Development Area that would control the release of pollutants into surface waters. The plan titled "Coyote Springs Lincoln County Stormwater Management Plan" (Appendix I) addresses the six SMS 4 program elements noted in the evaluation criteria. The SWPPP establishes milestones that must be accomplished for each of the six program elements. The SMS 4 program recognizes that when these six elements, which includes structural and institutional BMPs, are implemented in concert, a significant reduction of pollutants discharged to surface waters is expected. CSI would submit a NOI to NDEP for implementation of the NVS 040000 General Permit for SMS 4 entities. The permit contains monitoring, reporting, and recordkeeping requirements that require the submission of reports to NDEP regarding the status of the various components of the plan and any proposed modifications. Implementation of the Coyote Springs SWMP, Master SWPPP, and Working-In-Waterway permits would reduce the release of pollutants from the Development Area into WOUS and subsequently Pahranagat Wash incised ephemeral channel.

Natural buffers, stormwater systems and regulations regarding management of golf courses and other manicured landscape areas would limit the potential for nutrient-rich runoff to enter surface waters. Implementation of the SWMP and BMP would produce slight positive effects on the hydrology in the Development Area by controlling pollutants.

Groundwater could potentially be affected, if fuel or hazardous material spills were to occur during construction activities and were able to infiltrate down to groundwater, which has been measured at wells in the area at 400 feet bgs (Johnson 2005). Best management practices identified for fuel use and hazardous materials would likely prevent such occurrences.

In addition, the potential for contamination of groundwater through the use of monitoring wells and/or injection wells would exist. Using contaminated materials in conjunction with monitoring wells could occur, although they would be unlikely. Injecting effluent into the groundwater aquifer through injection wells could result in contamination of the groundwater. However, requirements for monitoring wells by NDEP and NDEP permits for injection wells would minimize the potential for contamination to occur.

INDIRECT EFFECTS

As discussed in the Direct Effects section, the implementation of construction and post-construction structural and institutional BMPs would manage stormwater pollutants and sediments concurrent with an increase in the number of urban sources that generate pollutants. Increased use of vehicles in the area could potentially increase any potential hydrocarbon contamination.

CSI recognizes the need to protect the surface and ground water quality of the waters of the State of Nevada. In order to protect water quality and conserve water resources, all domestic wastewater would be collected for tertiary treatment, disinfected, stored, and subsequently reused within or outside of the Development Area. A sewage collection system would convey the domestic wastewater to treatment facilities. The facility would utilize Membrane Bioreactor technology to provide tertiary treatment and produce effluent with a CBOD and TSS of less than 1.0 mg/l, respectively and total nitrogen in the range of 5.0 to 6.5 mg/l. This quality effluent

would be suitable for reuse on golf courses and landscape areas consistent with NDEP effluent reuse requirements and would not degrade water quality resources.

As discussed in Section 4: Affected Environment, the Pahranagat Wash incised ephemeral channel only connects with the Muddy River during major storm events (100-year flood events or greater). Therefore, it is unlikely that the Pahranagat Wash ephemeral flows that may reach the Muddy River would have a significant influence on the water quality database that has resulted in the 303(d) listing. Avoidance, minimization, and mitigation measures such as sediment fencing and construction timing during no flow periods would reduce the sedimentation levels to low levels entering the Pahranagat Wash incised ephemeral channel during any upland construction activities; this sediment and potential associated contaminants are unlikely to travel 17 miles to the Muddy River.

As stated for the Preferred Alternative, groundwater could potentially be directly affected, if fuel or hazardous material spills were to occur during construction activities and were able to infiltrate down to groundwater. Best management practices identified for fuel use and hazardous materials would likely prevent such occurrences. Indirect effects could occur from spills by industrial companies operating on-site within industrial areas. Regulations of such areas would require spill avoidance measures in accordance with federal and state regulations.

5.4.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

5.4.2.3.1 Hydrology

DIRECT AND INDIRECT EFFECTS

Alternative 1 would produce greater negative direct and indirect effects as compared to the Preferred Alternative because activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. Activities on the 21,087 acres of private lands available for development in the Development Area, after creation of a Perpetual Conservation Easement Grant, would be of a greater density resulting in lower infiltration rates than for the Preferred Alternative.

As described for the Preferred Alternative, no additional adverse effects to groundwater or surface water would be expected from CSI's use of production wells in the Development Area or the CSICL in Lincoln County.

5.4.2.3.2 Water Quality

DIRECT AND INDIRECT EFFECTS

Alternative 1 would produce slightly greater negative direct and indirect effects as compared to the Preferred Alternative, because activities would occur on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. A reduced buffer width compared to the Preferred Alternative for protected, existing dry desert washes would not be as effective in limiting any increased sedimentation and/or contamination that could occur during infrequent storm events. In addition, if development activities were to occur in greater amounts at a given time compared to the Preferred Alternative, the potential for adverse effects to water quality could increase. Mitigation measures, such as the development of a SWPPP and temporary construction BMPs, would reduce the short-term and long-term potential for increased sediments and contaminants to enter WOUS and subsequently the Pahranagat Wash incised ephemeral channel from the Development Area and BLM utility corridor.

As stated for the Preferred Alternative, groundwater could potentially be affected, if fuel or hazardous material spills were to occur during activities from industrial companies operating on-site. Best management practices identified for fuel use and hazardous materials would likely prevent such occurrences. Indirect effects could occur from spills by industrial companies operating on-site within industrial areas. Regulations of such areas would require spill avoidance measures in accordance with federal and state regulations.

5.5 CULTURAL RESOURCES

This section presents summary information on the results of efforts to identify and evaluate cultural resources within the proposed APE. This section also explores how the three project alternatives affect existing cultural resources. Cultural resources may include buildings, structures, objects, districts, and sites as well as Traditional Cultural Places that are significant to the history or prehistory of the United States. The National Historic Preservation Act of 1966 (as amended), and its implementing regulations (36 CFR 800), require federal agencies to consider effects on cultural resources prior to the commencement of a federal undertaking. If cultural resources meet certain criteria, they are considered eligible for inclusion in the National Register of Historic Places (NRHP). If the proposed project alters or affects the characteristics for which resources are eligible, measures must be developed and implemented to avoid, minimize, or mitigate the effects. These measures are typically agreed to by all parties through a PA.

The current project area is governed by an MOU between the Nevada SHPO and Aerojet that was consummated in 1990. CSI assumed the responsibilities for this MOU upon its purchase of the property from Aerojet. Drafted in accordance with the requirements of the Nevada-Florida Land Exchange Authorization Act of 1988, the MOU adopted a programmatic plan for cultural resources that established study methods including level of investigation, testing, analysis, and record keeping for implementing these methods within the project area prior to land disturbing activities that may impact or destroy cultural resources. This plan is listed as Attachment A of the MOU and is entitled "Procedures and Standards for Cultural Resource Studies, Coyote Spring Valley and Garfield Flat Plan Areas, Southern Nevada." This plan is consistent with the Advisory Council on Historic Preservation's *Handbook Treatment of Archaeological Properties and the Archaeological Elements of the Nevada State Historic Preservation Plan*.

Consistent with the MOU and Attachment A, a cultural resources survey was conducted in 2006 to identify and evaluate cultural resources within the project area. In all, twenty-seven prehistoric sites and four historic resources were identified and evaluated to be potentially eligible for the NRHP. An additional 3,555 acres on the north end of the project area will be surveyed under the provisions of either the existing MOU or a new MOU or PA. These investigations will be governed by the pre-existing, but amended MOU or a new MOU or PA. Additional acreage associated with the installation of water detention basins to the west of the project area will also be surveyed according to the pre-existing memorandum or a new MOU or PA.

On April 6 and 9, 2007, respectively, the USFWS and BLM delegated certain regulatory responsibilities for complying with Section 106 of the National Historic Preservation Act (NHPA) to the Corps consistent with 36 CFR 800.2(a)2 (Appendix M). Following the delegation of responsibility, the Corps is currently in the process of consulting with the Nevada SHPO. An update on archeological surveys was distributed to the Moapa Band of Paiute on March 27, 2007. Additional tribes associated with the project area were contacted by Knight and Leavitt Associates by letter on October 18, 2007 to ascertain their interest in the project. The Corps has sent letters to the applicable tribes and to formally request that Knight and Leavitt Associates act as the Corps' agent in tribal consultation. On November 15, 2007, Knight and Leavitt Associates invited interested tribes for a site visit on December 13, 2007 (Appendix M). Prior to the publication of the Record of Decision for this EIS, the Section 106 consultation with agencies and tribes will have been completed.

5.5.1 Evaluation Criteria

Adverse impacts to cultural resources may occur when development activities alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the NRHP. These activities may include, but are not limited to physical destruction through ground disturbance, removal of the historic property from its original location, change of the character of the property's use, or the transfer, lease, or sale of the property out of federal ownership.

Should project impacts adversely affect cultural resources, federal agencies are required by Section 106 of the NHPA to consult with the SHPO, pertinent tribes, as well as impacted public constituencies in an attempt to mitigate any adverse effects. Mitigation includes actions intended to reduce or compensate for damages to, or the loss of, an NHRP-eligible resource. Mitigation may include in-place site avoidance, site protection, site interpretation, data recovery (either of a general or highly specific nature), alternate site or area studies, or other activities as agreed upon by the USFWS, Corps, BLM, CSI, as well as the Nevada SHPO. The decision-

making process and methods for consultation would be explicitly explained in a new PA or MOU or through what has been established in the existing MOU.

5.5.2 Comparative Analysis of Alternatives

5.5.2.1 No Action Alternative

DIRECT AND INDIRECT EFFECTS

The No Action Alternative would result in all cultural resources within the project area remaining intact, provided no incidental take permit or Section 404 permit were obtained.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining the required incidental take and Section 404 permits. If these permits were issued, 21,454 acres of private land in Lincoln County could be available for development by individual landowners, and up to 7,548 acres of lease lands could be affected by associated infrastructure, including roads. However, the full extent of these lands would not be expected to be affected, as the current lack of infrastructure and the lack of coordinated planning would make it difficult to provide adequate infrastructure for the entire area.

The project area would be subject to Section 106 of the NHPA. Of the entire 29,002 acres, only 22,174 acres has been surveyed for the presence of cultural resources. The additional 6,828 acres of land leased by CSI from the BLM in Lincoln County would be subject to Section 106 of the NHPA should activities in accordance with the Land Lease Agreement occur on those properties. Adverse effects could potentially result to cultural resources, although the level of effect is unknown at present because the amount of development if private CSI lands in Lincoln County were sold to individual landowners is uncertain.

5.5.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT AND INDIRECT EFFECTS

The Preferred Alternative would result in the addition of 7,548 acres in Lincoln County to the 6,219 acres in Clark County for inclusion in the CSICL. Of the 21,454 acres within the Development Area, Covered Activities would occur on 20,716 acres. The other 737.7 acres (existing, avoided WOUS and associated upland buffer habitat) in the 21,454-acre Development Area would be protected in a conservation easement, and thus no activities would occur on these lands. However, some of these acres could be superficially disturbed through providing access to restored WOUS sites, resulting in a potential contextual loss with respect to cultural resources. Up to 244 acres of the BLM utility corridor could be graded to create up to eight detention basins, and lands within the CSICL would be affected from construction of a tortoise collection and rearing facility, trails, educational kiosks, and restored WOUS.

Concept plans indicate that most, if not all, cultural resources within the Development Area and BLM utility corridor could be adversely affected by development activity, namely the ground disturbing activities associated with the Preferred Alternative. The CSICL, as it is currently proposed, may also come to encompass portions of some NRHP-eligible sites and potentially protect some elements of those sites. In order to evaluate impacts to cultural resources under this alternative, the Corps and the applicant (CSI) would consult with the Nevada SHPO and any applicable tribes as appropriate and agree upon any mitigation measures prior to the issuance of any permit. USFWS would be involved in the consultation as appropriate. Any activities that would occur on the BLM lease lands would be subject to Article 10 of the Land Lease Agreement (Appendix G), which identifies the process for addressing cultural resources on these lands. This would occur through the existing MOU, or through a newly developed PA or MOU, if the existing MOU does not serve the needs of all the entities involved.

5.5.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT AND INDIRECT EFFECTS

Alternative 1 would result in the disturbance of 20,716 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor. The other 737.7 acres (avoided WOUS and associated upland buffer habitat) in the 21,454-acre Development Area would be protected in a conservation easement, and thus no activities would occur on these lands. However, some of these acres could be superficially disturbed through providing access to restored WOUS sites, resulting in a potential contextual loss with respect to cultural resources. Overall, the potential adverse effects to cultural resources would be greater than for the Preferred Alternative.

Concept plans, however, indicate that most, if not all cultural resources within the project area (private lands, lease lands, and BLM utility corridor) could be adversely affected by development activity, namely the ground disturbing activities associated with the alternative. In order to evaluate impacts to cultural resources under this alternative, the Corps and CSI would consult with the Nevada SHPO and any applicable Tribal entities as appropriate and agree upon any mitigation measures prior to the issuance of any permit. USFWS would be involved in the consultation as appropriate. Any activities that would occur on the BLM lease lands would be subject to Article 10 of the Land Lease Agreement (Appendix G), which identifies the process for addressing cultural resources on these lands. This would occur through the existing MOU, or through a newly developed PA or MOU, if the existing MOU does not serve the needs of all the entities involved.

5.5.3 Section 106 Summary

All cultural resources that exist within the confines of the APE (29,002 acres of CSI private and lease lands and the 3,331-acre BLM utility corridor) are currently subject to the 1990 MOU between the Nevada SHPO and CSI. Should the USFWS and/or Corps issue permits under their respective authorities and/or if the BLM transfers property out of federal ownership, these resources would also be subject to Section 106 of the NHPA (36 CFR 800). This act requires federal agencies to take into account the impacts of their actions upon cultural resources. On April 6 and April 9, 2007, respectively, the USFWS and BLM delegated certain responsibilities for complying with Section 106 to the Corps. As a result, a Class 3 cultural resources survey was conducted on 22,174 acres, and 27 prehistoric and four historic resources were identified. Additional surveys are planned on the northern portion of the project area (approximately 3,555 acres) and on additional property to the west of the project area in preparation for constructing stormwater detention basins. Due to the similarity of requirements within the MOU and 36 CFR 800, the Corps and the applicant (CSI) will consult with the Nevada SHPO and any applicable tribes about appropriate forms of mitigation to resolve any adverse effects to cultural resources. USFWS would be involved in the consultation as appropriate. Any activities that would occur on the BLM lease lands would be subject to Article 10 of the Land Lease Agreement (Appendix G), which identifies the process for addressing cultural resources on these lands. If the Preferred Alternative is selected as the proposed action, there may be opportunities for the CSICL to provide some protections to eligible sites by overlapping the goals of natural resource conservation with cultural resource preservation. In order to comply with Section 106, the existing MOU or a new MOU or PA will be used to guide decision making in regards to the identification, evaluation, and treatment of resources within the APE. If a PA or new MOU is developed, it would include the Nevada SHPO, Corps, and CSI. USFWS would be involved in the consultation as appropriate. As stated above, any activities that would occur on the BLM lease lands would be subject to Article 10 of the Land Lease Agreement (Appendix G), which identifies the process for addressing cultural resources on these lands. Tribes may also request inclusion in the agreement as concurring parties.

5.6 SOILS, MINERALS, AND GEOLOGICAL RESOURCES

5.6.1 Evaluation Criteria

There are no specific quantitative or qualitative evaluation criteria in Lincoln County for soils or geologic resources on private land other than air quality regulations required to control fugitive dust and grading permits for soil disturbance.

5.6.2 Comparative Analysis of Alternatives

5.6.2.1 No Action Alternative

DIRECT EFFECTS

Under the No Action Alternative, Section 404 and incidental take permits would not be issued to CSI for development of the master planned community. No direct effects to soils would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. These individual landowners could conduct development on a parcel-by-parcel basis, which could result in soil disturbance and loss. The amount of development could range from zero acres to as many as 21,454 acres, depending on the rate at which individual permits were obtained. Therefore, impacts would range from no impacts (i.e., no development) to extensive impacts (i.e., up to 21,454 acres of development), depending on the rate of development individually permitted each year. It is considered unlikely that the full 21,454 acres would be developed and disturbed, as the current lack of infrastructure and lack of a comprehensive planning process would make it difficult to provide infrastructure sufficient for the entire private lands. Lands leased by CSI could be developed for roads or utilities, which could result in soil loss and disturbance on up to an additional 7,548 acres in Lincoln County. It is unlikely that roads and utilities would occur on more than a small portion of these lease lands. However, CWA Section 404 and ESA incidental take permits (or a Biological Opinion and incidental take statement under Section 7 of the ESA) would still be required for development of the area; therefore, any soil disturbances and loss would be minimized by resulting mitigation measures.

5.6.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

Under the Preferred Alternative, development activities in the planned community would result in large amounts of ground disturbance within the Development Area. Soil disturbance at any one time would be kept as low as possible. Sequential development measures would minimize soil loss to wind erosion. Other best management practices would ensure soils and sediments would not be lost from the area through flooding and/or erosion. Although soils would be superficially disturbed over large areas from Covered Activities (20,716 acres in the Development Area, up to 244 acres in the BLM utility corridor, and a small portion of the CSICL), these mitigation measures would minimize soil loss and disturbance. Long-term adverse effects would result from the development of impervious surfaces on top of soils, as this would effectively limit the fertility of these soils through diminished aerobic microbial processes. Other areas would eventually return to normal productivity and fertility through revegetation with native plants. Across the entire project area, these soil disturbances would occur only in the Development Area and where the collection and rearing facility would be constructed within the CSICL. Restoration of WOUS and disturbance to existing WOUS within the Development Area and BLM utility corridor would result in permanent soil disturbances, but would not involve impervious surfaces. The CSICL would comprise 13,767 acres of land, which would have minimal soil disturbances from trail.

Landscaping and nursery activities would result in localized effects to organic matter in the top layer of soil. Planting would involve soil preparation and some temporary soil compaction. Over time, soil fertility would increase, outweighing adverse effects of tilling through upper soil horizon layers. These effects would occur in the Development Area and would be both adverse and beneficial. Overall, effects to soils would not be significant.

Geological resources would not be affected, as the distance to bedrock is deep below the alluvial soils.

INDIRECT EFFECTS

No unique or special geologic or soil resources in the Development Area would be indirectly affected by the Preferred Alternative.

5.6.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features direct effects

Direct effects to soils would be similar to the Preferred Alternative, although the magnitude would be greater as development would occur across a greater area (21,087 acres of CSI private land, 7,548 acres of lease land, up to 244 acres of detention basins in the BLM utility corridor), and all development would occur immediately. Effects from WOUS restoration and protection in a conservation easement would be similar to those described for the Preferred Alternative, although the acreage affected would be slightly different under Alternative 1.

INDIRECT EFFECTS

No unique or special geologic or soil resources in the Development Area would be indirectly affected by the Preferred Alternative.

5.7 ECOLOGICALLY CRITICAL AREAS

5.7.1 Evaluation Criteria

The term "areas of critical environmental concern" means "areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards [Federal Lands Policy and Management Act of 1976, (43 U.S.C. 1702)]."

This mandate directs the BLM to protect important riparian corridors, threatened and endangered species habitat, cultural and archeological resources, and unique scenic landscapes throughout the Southwest that the agency believes need special management attention.

The Kane Springs and Mormon Mesa ACECs are managed according to the current Ely Resource Management Plan (BLM 2007a), and the Coyote Spring ACEC is managed according to the current Las Vegas Resource Management Plan (BLM 1998).

5.7.2 Comparative Analysis of Alternatives

5.7.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects to ecologically critical areas would result from implementation of the No Action Alternative.

INDIRECT EFFECTS

No indirect effects to ecologically critical areas would occur if Section 10 and Section 404 permits were not issued for the project area and the CSI private and leased lands were not reconfigured.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. Development could occur from individual landowners if individual incidental take and Section 404 permits were issued. Without a comprehensive habitat conservation plan in place to minimize potential effects such as the potential spread of invasive species to adjacent and nearby ACECs, a decrease in habitat quality in adjacent ecologically critical areas may occur. In addition, habitat fragmentation as a result of development near protected desert tortoise habitats could also result in diminished habitat quality in the ACECs. However, because the area potentially affected would be of a small size (up to 29,002 acres, with only a portion of the full acreage expected to be disturbed, due to infrastructure issues) compared to the size of the three ACECs (268,526 acres), the effect to ecologically critical areas would be less than significant.

If development were to occur by individual landowners, residents of the development would likely use the nearby BLM lands (including the ACECs). This could introduce the potential for increased social trails, and

other effects of recreation on these ecologically critical areas. Because OHVs are prohibited in the ACECs and the Desert National Wildlife Range that completely surround the project area, no localized effects from OHV use would be expected. Increased OHV use in the public lands surrounding the ACECs and Desert NWR and on designated trails in certain ACECs could potentially occur from the increased population in the area. It is assumed that future incidental take and Section 404 permits would include provisions to minimize these adverse effects on adjacent ACECs.

5.7.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

No direct effects to ecologically critical areas would result from implementation of the Preferred Alternative.

INDIRECT EFFECTS

Coordinated, phased development of 20,716 acres within the 21,454-acre Development Area within the project area and development of up to 244 acres of detention basins in the BLM utility corridor would result in loss of desert tortoise critical habitat near three ACECs. The land reconfiguration that would occur under the Preferred Alternative would minimize habitat fragmentation and ensure habitat connectivity of the CSICL, a component of the Preferred Alternative, with the adjacent Mormon Mesa ACEC and TCF lands. Protecting 13,767 acres of land in this CSICL would help to offset the effects of habitat fragmentation on these ACECs. Conservation and mitigation measures would ensure proper education for residents occupying the CSI lands, with respect to proper use of the ACECs, so as to minimize increases in social trails and adverse effects to desert tortoise and other wildlife. Because OHVs are prohibited in the Desert National Wildlife Range and all but certain designated roads in the ACECs and no access would be provided from CSI lands, little to no localized effects from OHV use would be expected. Increased OHV use in the public lands surrounding the ACECs and Desert NWR could potentially occur from the increased population in the area. Overall, some adverse effects to ecologically critical areas would be expected, but would be within guidelines (i.e., Ely and Las Vegas RMPs) for the ACECs and other BLM lands, which allow OHV use on designated trails and roads. Therefore, adverse effects would be less than significant.

5.7.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

No direct effects to ecologically critical areas would result from implementation of Alternative 1.

INDIRECT EFFECTS

Under Alternative 1, a land reconfiguration would occur, which would locate the lease lands to the north and east portions of the project area, but no lands would be protected within the CSICL in Lincoln County (see Figure 3-5). Therefore, while conservation measures would have the same effect within the Development Area and BLM utility corridor as described for the Preferred Alternative, no land would be protected adjacent to the ACECs. This could potentially allow further development near these ACECs in the future. However, because the amount of development would be relatively small compared to the size of the ACECs and the conservation measures would minimize all effects aside from habitat fragmentation, effects on ecologically critical areas would be detectable, but minimal in nature. Other effects, such as increased recreation in the vicinity of the project area, including the ACECs, would be expected, as described for the Preferred Alternative. Overall, these effects would be expected to be less than significant, but would be greater than under the Preferred Alternative.

5.8 WILDERNESS AREAS

5.8.1 Evaluation Criteria

The technique used to assess wilderness from management activities in this document is in accordance with the Wilderness Act of 1964 and BLM Manual H-8550-1. The evaluation method considered primeval character and the influence of wilderness, preservation of natural conditions (including lack of manmade noise), primitive and unconfined recreation for the public, and outstanding opportunities for solitude. These all interact to determine the degree of impact for an activity. Steps for assessing impacts included: 1) identifying wilderness areas in the surrounding area that may be affected by actions of the alternatives and 2) determining the potential impacts on wilderness caused by actions under each alternative.

These analyses of impacts on wilderness are qualitative and are assessed given the degree to which the alternatives would change compared to existing conditions.

5.8.2 Comparative Analysis of Alternatives

5.8.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects to wilderness areas would result from implementation of the No Action Alternative.

INDIRECT EFFECTS

No indirect effects to wilderness areas would occur if Section 10 and Section 404 permits were not issued for the project area and the CSI private and leased lands were not reconfigured.

However, if the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. Development could occur from individual landowners if individual incidental take and Section 404 permits were issued. Without a comprehensive habitat conservation plan in place to minimize potential effects such as the potential spread of invasive species to adjacent and nearby wilderness areas (i.e., Delamar Mountains Wilderness, Meadow Valley Range Wilderness, and Arrow Canyon Wilderness) and increase in human use of the wilderness areas, a decrease in wilderness quality in adjacent wilderness areas may occur. Given the limited access and the distance to the Mormon Mountains Wilderness, effects to that area would be unlikely. Reduction of opportunities for solitude may occur in wilderness areas if users of these areas increase from development in the Coyote Spring Valley. Garbage dumping, vandalism of wildlife or range projects, and harassment of wildlife may also occur.

If development were to occur by individual landowners, residents of the development would likely use the nearby BLM lands (including the wilderness areas). This could introduce the potential for increased social trails, and other effects of recreation on these wilderness areas. Because OHVs are prohibited in the wilderness areas surrounding the project area, no localized effects from OHV use would be expected, except for the potential for increased illegal use of OHVs in wilderness and wilderness study areas. It is assumed that future incidental take and Section 404 permits would include provisions to minimize these adverse effects on adjacent wilderness and/or wilderness study areas.

5.8.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

No direct effects to wilderness and/or wilderness study areas would result from implementation of the Preferred Alternative.

INDIRECT EFFECTS

Coordinated, phased development of 111,000 residential units within the project area would result in an increase in population near two wilderness areas and one wilderness study area. Given the limited access and the distance to the Mormon Mountains Wilderness, effects would be unlikely. The land reconfiguration that would occur under the Preferred Alternative would ensure the maximum connectivity of the CSICL, a component of the Preferred Alternative, with the adjacent Meadow Valley Range Wilderness area. This reconfiguration would remove the potential for development to occur directly adjacent to a wilderness area, minimizing the level of potential effects. Motorized access to the CSICL would be prohibited through fencing and enforced regulations. As the CSICL is approximately four kilometers wide and is approximately seven kilometers deep from Lincoln County to the southern end of the CSICL, near the Arrow Canyon Wilderness, access on foot through the CSICL would likely limit the number of residents entering the wilderness and wilderness study areas adjacent and surrounding the project area. However, due to the size of the development within the project area, use of wilderness areas would likely increase and may affect the opportunity for solitude of users of wilderness areas. Educational programs for residents regarding desert tortoise would likely include an explanation of the ACECs and wilderness and wilderness study areas and their regulations. This could assist in reducing any potential effects such as increased social trails and noise visitors from the development area. The distance of the wilderness and wilderness study areas from the development area (four kilometers to the east, two kilometers to the north, and seven or more kilometers to the south) would help limit the level of noise and light intrusion into these areas, thereby maintaining wilderness values. CCRs for maintaining a dark sky would minimize some of these potential effects.

Management of the CSICL would include a weed management plan, fire conservation measures, and research regarding invasive species. These would limit the potential for effects the development could have on wilderness and wilderness study areas from increased fire risk and increased invasive plant species.

Overall, some indirect adverse effects to wilderness and wilderness study areas would be expected, but these effects would be minimized by distance from the Development Area and regulations within the Development Area (i.e., CCRs).

5.8.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

No direct effects to wilderness and/or wilderness study areas would result from implementation of Alternative 1.

INDIRECT EFFECTS

Under Alternative 1, a land reconfiguration would occur, which would locate the lease lands to the north and east portions of the project area, but no lands would be protected within the CSICL in Lincoln County. Therefore, no land would be protected adjacent to the wilderness and wilderness study areas. This could potentially allow further development near these wilderness and wilderness study areas in the future. Noise levels would have the potential to affect one or more of the wilderness and wilderness study areas if construction activities on the lease lands occurred near these areas. Light pollution from the development and the lease lands could also be an adverse effect, but CCRs for maintaining a dark sky would help minimize some of these potential effects from the Development Area.

As described for the Preferred Alternative, educational programs for residents regarding desert tortoise would likely include an explanation of the ACECs and wilderness and wilderness study areas and their regulations.

Other effects, such as increased recreation in the vicinity of the project area, including the wilderness areas, would be expected, as described for the Preferred Alternative. Overall, these indirect effects would be expected to be less than significant, but would be greater than under the Preferred Alternative.

5.9 VISUAL RESOURCES

5.9.1 Evaluation Criteria

Implementation of the planned development cannot result in changes to aesthetic qualities within and adjacent to the project area beyond those allowed by federal, state and local jurisdictions. Aesthetic qualities on private land in Lincoln County are guided by the Lincoln County Code. Aesthetics are evaluated using compatibility or contrast with the existing setting. Title 13 of the Lincoln County Code, titled Planning and Development Code, identifies building height, yard sizes, lot area and width requirements, and distance between buildings on the same lot. Title 15 of the Lincoln County Code, titled Coyote Springs Planned Unit Development Code, addresses the regulation and maintenance of planning and zoning within the Coyote Springs Planning Area. PUDs must comply with the Lincoln County Code with respect to site development standards.

According to the Development Agreement between Lincoln County and CSI, the Coyote Springs Charter Association will create and establish uniform design guidelines for all construction and development within the Planned Community by use of recorded restrictive covenants or pursuant to contractual obligations binding on purchasers of property within the Planned Community. These design guidelines will become a part of any approved tentative or Final PUD Plan. Lincoln County has agreed to utilize the Coyote Springs Charter Association design guidelines, adopted within a Tentative PUD Plan, in the construction of any Lincoln County facility within the PUD plan area (Coyote Springs Development Agreement, County and CSI 2004).

The Coyote Springs Design Standards and Covenants, Conditions, and Restrictions (CCRs) include the following building design principles:

- Reflect the architectural heritage of the Southwest and American West. Exemplify these styles in the public and semi-public buildings as a distinctive imaging and place-making stratagem for the community.
- Provide an eclectic expression of these style families throughout the community, with subtle shifts in sub-styles between villages and districts.
- Within the limits of Phase 1A, focus on a more rusticated, limited set of sub-styles to provide a cohesive image and identity for the community's first public buildings.
- Consider color as one of the most basic primary definers of Western American style and shall be medium to dark in tone and blend with the natural setting.
- Leverage materials as a primary style determinant with significant proportions of natural stone, stucco, and stained wood used in more natural and rustic expressions.
- In addition to the above, use texture as a key tool of expressing the preferred style families. Default to non-reflective surfaces that visually recede in the natural environment.
- Emphasize the pedestrian scale; meaning the first floor of all public buildings being "high touch, high feel" in finish with a strong focus on detail, spatial intimacy and people-gathering places.
- Consider sustainability in the design of all public buildings and achieve or exceed sustainability criteria established by the Design Review Committee.
- Pursuant to the Charter Association's Design Review Committee's rules and regulations, it is the intent of Declarant that the Project be a "dark sky" compatible project and use appropriate lighting to achieve the "dark sky" concept.

Aesthetics on the adjacent land managed by the BLM is guided by the BLM Resource Management Plan (BLM 1998). Visual resources are rated using BLM Manual Handbook 8431-1, Visual Resource Contrast Rating. The contrast rating system is a systematic process used by the BLM to analyze potential visual impacts of proposed projects and activities on land managed by the BLM. The contrast rating includes analyses of form, line, color, texture, scale and space. Thus, while the Lincoln County Code Titles 13 and 15 applies to the Development Area, the BLM Contrast Rating would apply to both the BLM utility corridor and the lands CSI is leasing from BLM.

5.9.2 Comparative Analysis of Alternatives

5.9.2.1 No Action Alternative

DIRECT EFFECTS

Under the No Action Alternative, no direct effects to visual resources would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and Section 404 permits. The various developments could affect the local viewshed, if development by individual landowners were to occur. Because the existing land configuration would be maintained, higher elevations in the eastern portion of the area could be developed by individual landowners, which would be more noticeable from U.S. Highway 93 and surrounding areas than those developments occurring at lower elevations in the western portion of the project area. Coyote Springs Design Standards would not be applicable; therefore, only existing Lincoln County guidelines would need to be met. Because various individual landowners would develop in the project area, aesthetic differences among the buildings constructed could occur.

INDIRECT EFFECTS

No indirect effects would occur.

5.9.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

Under the Preferred Alternative, development would be limited to the Development Area and the BLM utility corridor, which are both located along U.S. Highway 93. The CSICL would protect higher elevations to the east, thereby limiting the effects of development to a smaller viewshed (area viewable from a given site). However, because all lands visible from the CSI lands are currently undeveloped, the alteration of this area with residential and commercial development would dramatically alter the visual landscape in a permanent fashion. Passersby on U.S. Highway 93 and nearby State Route 168 would be unable to avoid noticing the differences in the landscape, as desert scrub habitat would be converted into roads, buildings, and other infrastructure. These alterations would be of a lesser extent than the No Action Alternative and Alternative 1, as there would be no development at higher elevations within the project area. However, these changes would all occur in compliance with the Coyote Springs PUD Code, which would ensure development would occur in a manner desirable for Lincoln County. For this reason, no significant adverse effects to visual resources from the Preferred Alternative would occur.

Inclusion of a dark sky lighting requirement in the CCRs for the project would minimize the potential effects of lighting within the 21,454-acre Development Area. This requirement would be enforced through the Master Association according to its Design Review Committee. As such, light sources would face downward and would limit light pollution in the project area. No significant adverse effects to visual resources from light pollution would be anticipated with these requirements in place, although some alterations of the night's darkness would be unavoidable.

Construction of detention basins in the BLM utility corridor would result in slight alterations to the visual landscape, which could result in slight adverse effects to visual resources in the BLM utility corridor through changes in form and line. However, this area has been designated as a right-of-way by BLM for use in developing utilities; therefore, these visual alterations would not be inappropriate for this area.

The inherent visual character of the lease lands would not be changed, as lease lands would comprise the CSICL, a protected area that would maintain existing undeveloped characteristics, including line, form, color, and texture. Small alterations to the CSICL would include the construction of a tortoise collection and rearing facility, trails, and 3.6 acres of restored WOUS. However, these alterations to the area would be allowable under the Land Lease Agreement and would not notably alter the inherent visual character of the lease lands. Therefore, the Preferred Alternative would not result in significant indirect impacts to visual resources.

INDIRECT EFFECTS

Construction of the CSI Development could result in increased development demand in nearby areas. If this occurred, additional effects to visual resources could result, as further undeveloped lands were converted into residential and/or commercial areas. Because of the lack of limited available private land in the immediate vicinity, these effects would be unlikely to occur.

Indirect effects associated with the residential, commercial, and recreational development have the potential to impact the visual resources where patterns of area, line, form, color and texture in the characteristic landscape contrast with constructed residential, commercial, and recreational structures that replace some of the desert dry washes. The Coyote Springs Design Standards direct building design to use dark colors, non-reflective materials, and screening. Specific visual impacts would depend on the specific type of building, the existing visual character of the surrounding setting, the distance between the building and observer viewpoints, and whether local barriers and topography provide visual screening. These types of visual considerations are described in the Coyote Springs Design Standards. The development would also utilize native vegetation salvaged from within the Development Area. The project would comply with the Coyote Springs PUD Code.

Although the CSI Development would be visible from BLM-managed lands, the context from which these BLM lands are analyzed for visual resources would not be altered, because the BLM Contrast Rating applies only to BLM land. Therefore, the Preferred Alternative would not result in significant indirect impacts to visual resources.

5.9.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

Alternative 1 would result in the development of the entire project area and a portion of the BLM utility corridor with structures constructed on the private lands per a reconfiguration of lease lands to the north and east of the private lands. Higher elevations in the eastern portion of the area would be used for activities in the Land Lease Agreement on lands leased from the BLM. This could adversely affect the visual resources of these lease lands, although only activities authorized under the Land Lease Agreement (e.g., road building, utility infrastructure) would occur.

Increased housing units and development of the lease lands would also result in greater alterations to visual resources than under the Preferred Alternative, including a slight increase in light levels during the night. This would result in a greater effect to the area's viewshed, as the development would be more noticeable from passersby on U.S. Highway 93. However, all development would occur in compliance with the Coyote Springs Planned Unit Development Code and the Land Lease Agreement; therefore, no significant adverse effects would occur.

INDIRECT EFFECTS

Indirect effects would be similar to those described for the Preferred Alternative.

5.10 AIR QUALITY

5.10.1 Evaluation Criteria

Ambient air quality is protected by federal and state regulations. The following criteria are used to determine whether actions of the alternatives would have significant impacts on air quality. The impacts would be significant if implementation of the alternative being analyzed would result in exceedance of federal or state air quality criteria in air concentrations or emissions.

5.10.1.1 Federal Air Quality Requirements

The Clean Air Act (CAA) of 1970, (42 USC 7401 et seq. as amended in 1977 and 1990), is the basic federal statute governing air quality. The project would only have temporary construction-related air emissions and, as such, would not be subject to the following provisions of the CAA:

- New Source Review (NSR) requirements;
- Prevention of Significant Deterioration (PSD);
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAPS); and
- Title V Operating Permits (Title V).

5.10.1.1.1 National Ambient Air Quality Standards (NAAQS)

Under requirements of the CAA, the EPA has developed primary and secondary NAAQS for six criteria air pollutants: ozone (O_3), nitrogen dioxide (NO_2) or nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), 10-micron particulate matter (PM_{10}) and sub-2.5-micron particulate matter ($PM_{2.5}$). The criteria pollutants are described in more detail below. The EPA designated an area as being in attainment for a criteria pollutant if ambient concentrations of that pollutant are consistently below the NAAQS and non-attainment if repeated violations of the NAAQS occur. In areas where insufficient data are available to determine attainment status, designations are listed as unclassified. Unclassified areas are treated as attainment areas for regulatory purposes. For areas of the country that are currently classified as non-attainment areas, new sources to be located in or near these areas are typically subject to more stringent air permitting requirements (i.e., NSR) than similar sources in attainment areas (i.e., Prevention of Significant Deterioration [PSD]).

Gasoline, diesel fuel and natural gas combustion sources emit the criteria air pollutants listed above, along with reactive organic compounds (ROCs), a precursor of O_3. The primary standards were designed to protect public health while the secondary standards protect public welfare, predominately visibility. The NAAQS have been developed for specific durations of exposure over specific averaging times. For O_3, a new 8-hour standard, established by the EPA, has superseded the current 1-hour standard. The NAAQS are codified in 40 Code of Federal Regulations Part 50 and summarized, along with the Nevada State Ambient Air Quality Standards, in Table 5-5.

Table 5-5 Ambient Air Quality Standards

Pollutant	Averaging Time	Nevada Standards[a]	National Standards[b]	
		Concentration	Primary[c,d]	Secondary[c,e]
Ozone	8 hours	0.08 ppm	0.08 ppm	Same as primary
Carbon monoxide less than 5,000 ft above mean sea level	8 hours	10,000 g/m^3 (9.0 ppm)	10,000 g/m^3 (9.0 ppm)	None
At or greater than 5,000 ft above mean sea level		6,870 g/m^3 (6.0 ppm)		
Carbon monoxide at any elevation	1 hour	40,000 g/m^3 (35 ppm)	40,000 g/m^3 (35 ppm)	
Nitrogen dioxide	Annual arithmetic mean	100 µg/m^3 (0.053 ppm)	100 µg/m^3 (0.053 ppm)	Same as primary
Sulfur dioxide	Annual arithmetic mean	80 g/m^3 (0.03 ppm)	80 g/m^3 (0.03 ppm)	Same as primary
	24 hours	365 g/m^3 (0.14 ppm)	365 g/m^3 (0.14 ppm)	
	3 hours	1,300 µg/m^3 (0.5 ppm)	None	1,300 µg/m^3 (0.5 ppm)

Table 5-5 Ambient Air Quality Standards

Pollutant	Averaging Time	Nevada Standards[a]	National Standards[b]	
		Concentration	Primary[c,d]	Secondary[c,e]
(Suspended) particulate matter as PM_{10}	24 hours	150 µg/m^3	150 µg/m^3	Same as primary
(Suspended) particulate matter as $PM_{2.5}$	24 hours	----	35 µg/m^3	Same as primary
Lead	Quarterly arithmetic mean	1.5 µg/m^3	1.5 µg/m^3	Same as primary
Visibility [h]	Observation	In sufficient amount to reduce the prevailing visibility to less than 30 mi when humidity is less than 70 percent	There is no national standard for visibility	There is no national standard for visibility
Hydrogen sulfide[i]	1 hour	112 g/m^3 (0.08 ppm)	There is no national standard for visibility	There is no national standard for visibility

NOTE: All values are corrected to reference conditions.

[a] These standards must not be exceeded in areas where the general public has access

[b] These standards, other than for ozone, PM_{10} and $PM_{2.5}$ and those based on annual averages, must not be exceeded more than once per year . To attain the ozone standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. PM_{10} must not to be exceeded more than once per year on average over three years. To attain the $PM_{2.5}$ standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3. To attain the 24 hour PM_{10} standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

[c] Concentration is expressed first in units in which it was adopted and is based on a reference temperature of 25 °C and a reference pressure of 760 mm of mercury. All measurements of air quality must be corrected to a reference temperature of 25 °C and a reference pressure of 760 mm of mercury (1,013.2 millibars); parts per million (ppm) in this table refers to ppm by volume or micromoles of pollutant per mole of gas

[d] National primary standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health

[e] National secondary standards are the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant

[f] Micrograms per cubic meter

[g] Parts per million by volume or micromoles per mole of gas

[h] For the purposes of this section, prevailing visibility means the greatest visibility that is attained or surpassed around at least half the horizon circle, but not necessarily in continuous sectors

[i] The ambient air quality standard for hydrogen sulfide does not include naturally occurring background concentrations.

PSD is a regulation incorporated in the CAA that limits increases of pollutants in clean air areas (attainment areas) to certain increments even though ambient air quality standards are being met. The PSD Program is implemented in large part through the use of increments and area classifications. The CAA area classification scheme for PSD establishes three classes of geographic areas and applies increments of different stringency to each class. Air quality impacts, in combination with other PSD-permitted sources in the area, must not exceed the maximum allowable incremental increases presented in Table 5-6.

Table 5-6 Maximum Allowable Pollutant Concentration Increases Under Prevention of Significant Deterioration Regulations

Pollutant	Averaging Time	Maximum Allowable Increment (g/m3)*		
		Class I	Class II	Class III
Particulate matter (PM_{10})	Annual	4.0	17.0	34.0
	24 hours	8.0	30.0	60.0
Sulfur dioxide (SO_2)	Annual	2.0	20.0	40.0
	24 hours	5.0	91.0	182.0
	3 hours	25.0	512.0	700.0
Nitrogen oxides (NO_x)	Annual	2.5	25.0	50.0

Source: 40 CFR Part 52.21, 1995.

*Microgram per cubic meter.

Facilities planning construction or modifications of a facility that is located in an attainment area may be subject to PSD regulations if classified as a "major" source or "major" modification. A new source is major, if it is one of 28 listed sources and has the potential to emit more than 100 tons per year of a regulated pollutant or more than 250 tons per year of a regulated pollutant, regardless of its source type. A modification is major, if it will occur at an existing major source and will cause emission increases of regulated pollutants above "significant" emission rate levels defined in the regulations. Major sources must first obtain a PSD permit for either a new facility or modifications from the state where the facility is located (40 CFR Part 52.21). The project area has no PSD sources or any planned new major sources. Therefore, there are no new major sources subject to PSD regulations in the project area and the full PSD increments are available.

Ambient air quality in the project area is not currently monitored for criteria pollutants or hazardous air pollutants (HAPs). Elevated levels of ozone or particulate matter may occasionally occur because of pollutants transported into the area or because of local sources of fugitive particulates. Ambient concentrations of other criteria pollutants (sulfur dioxide, nitrogen oxides, carbon monoxide, and lead) are probably low because there are no large sources of these pollutants nearby. The nearest significant source of pollutants is the Las Vegas area. The closest Class I PSD area is Grand Canyon National Park, approximately 121 km (75 mi) southeast of the project area.

5.10.1.2 Regulatory Setting: Local Air Quality Requirements

5.10.1.2.1 Consistency with State and Local Requirements

State law (Nevada Revised Statute Chapter 445B – Air Pollution) establishes local air pollution control districts and air quality management districts with the responsibility for regulating emissions from stationary sources. The Nevada Department of Conservation and Natural Resources is designated as the Air Pollution Control Agency of the State of Nevada for the purposes of the CAA, as it pertains to state programs. The Bureau of Air Quality Planning (BAQP) of the NDEP administers the air quality programs throughout rural Nevada, except those areas in Washoe and Clark counties per Nevada Administrative Code Chapter 445B – Air Pollution. Thus, the BAQP would be the permitting agency for the proposed project.

5.10.1.2.2 State Implementation Plans

The states are required to implement and enforce the NAAQS under a process called State Implementation Plans (SIPs), which are approved by the EPA. Generally, SIPs are comprised of federally-approved state and local air quality rules that are applicable to stationary sources that may emit criteria pollutants or HAPs. The federal CAA requires each state to prepare a SIP for nonattainment areas to demonstrate how it will attain the NAAQS within the federally imposed deadlines. SIPs for nonattainment areas are prepared by the BAQP. The BAQP adopts new rules under the SIP to facilitate attainment of the NAAQS by reducing emissions.

The EPA requires all PM_{10} emissions sources to be included in the inventory of a SIP if they contribute significantly to an annual or 24-hour violation of the NAAQS. A significant contribution is defined by EPA as a minimum contribution to the ambient concentration of one $\mu g/m^3$ to the annual average PM_{10} concentration in an area or over five $\mu g/m^3$ to the 24-hour average concentration.

5.10.1.3 Screening Air Quality Modeling Methodology and Analysis

Air quality impacts from fuel combustion emissions during construction were modeled using the EPA's general Gaussian-plume atmospheric dispersion model SCREEN3, version 96043. A unit emission rate of one gram per second (1 g/sec) was used to obtain a normalized result ($\mu g/m^3$) which was then multiplied by estimated emission rates (g/sec) for NO_2, CO, SO_2, and PM_{10} to estimate potential impacts. The distance range is 15 meters from the construction zone extending out two kilometers. Maximum impact distance predicted by the model for the proposed project is 319 meters (0.2 mile).

The screening model predicts expected worst case ambient concentrations for Stability Class D at an annual average wind speed of 4.8 meters per second (11 mph) for the project area. The model predicts maximum one hour impacts ($\mu g/m^3$), and other averaging time concentrations ($\mu g/m^3$) are obtained by multiplying 1-hour

average concentrations by correction factors per EPA guidance (Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised October 1992):

- Three (3) hours: 0.9
- Eight (8) hours: 0.7
- Daily (24) hours: 0.4
- Annual: 0.08

Because SCREEN3 is conservative, it can be used to demonstrate whether temporary sources can cause significant impacts on ambient air quality in the vicinity of a construction site. Table 5-7 lists the modeled emission rates in pounds per day for emission sources from implementing the Preferred Alternative.

Table 5-7 Off-Road Earthmoving Equipment Emission Factors

Tier I Emission Factor (g/BHP-hr)	NOX	SOX	CO	PM10	ROC
Diesel Off-Road Equipment	6.90	0.005	8.50	0.40	1.00
Source: URBEMIS 2002, Appendix H, 2000, 37.1 percent eff., 15 ppm S (40 CFR 89 Subpart B).					

Results of the screening analysis are shown in Table 5-9, which compares the estimated ambient concentrations from emissions during construction to the NAAQS at the maximum impact distance range of 319 meters from the construction zone. For the NAAQS analysis, model-estimated maximum concentrations are added to representative background concentrations to assess compliance with NAAQS. Background air quality data was collected from the nearest air monitoring stations (in Clark County) to yield values for all pollutants (i.e., NO_2, CO, SO_2 and PM_{10}).

Screening results show that in no case would individual NAAQS for any pollutant and averaging time be exceeded solely due to emissions from construction. Construction emissions alone would not violate any air quality standard or contribute substantially to an existing air quality standard violation (i.e., PM_{10}). There would be no significant air quality impact from construction, since none of the significance criteria defined above would be met. Based on air quality analysis and resulting mitigation measures, the Preferred Alternative would not have significant negative impacts to air quality.

5.10.1.4 Commuter Air Quality Impact Analysis Methodology

Estimated commuter traffic volumes were based on the Carter Burgess Coyote Springs Master Traffic Study and the Carter Burgess Clark County Traffic Study Presentation (herein referred to as Traffic Studies). These documents provided the number of dwelling units constructed in villages for project Phases one through 5, roughly corresponding to years 2015, 2023, 2028, 2035, and 2040. These traffic studies estimated lower and upper boundary trip generation rates ranging from one to 3.5 trips per dwelling unit per day corrected for external (e.g., commuter) versus internal trip capture rates cited in the traffic studies. Estimated typical trip distance was the 91-mile weighted average of the cited “Route A”, from Coyote Springs via US-93 and I-15 to Las Vegas, “Route B” from Coyote Springs via SR-168 to Moapa/Glendale and I-15, and “Route C,” from Coyote Springs via US-93 to the north. Respective weighting factors of 68 percent, 30 percent and 2 percent given in the cited traffic studies were used to calculate the weighted average. Approximate Route A, B and C mileages were obtained using DeLorme Street Atlas USA, a commercial mapping software.

Estimated vehicle mixes for 13 vehicle classes for years 2015, 2023, 2028, 2035 and 2040 were obtained using URBEMIS 2007. Vehicle emission factors (in units of grams/mile) for the 13 vehicle classes were obtained using EMFAC 2007 for the same years. To determine average emission factors for a particular year (Phase), an average vehicle age of eight years was assumed for the EMFAC runs. Since a typical vehicle is driven about 100,000 miles during this period of time, the emission factor midpoint for 50,000 miles was used as a typical value. Thus, for each Phase year, the typical emission factors for each vehicle class were the 50,000 mile averages for the eight model years comprising five phases x 13 classes x eight model years = 520 sets of emission factors for reactive organic gases (ROG), CO, NO_X, PM_{10} and the greenhouse gas carbon dioxide

(CO_2) for a total of 2,600 emission factors. SO_2 was obtained by multiplying CO_2 by the stoichiometric mass ratio of 10^{-5} (1/100,000), and $PM_{2.5}$ was obtained by multiplying PM_{10} by 0.99 per the Final Methodology to Calculate $PM_{2.5}$ Significance Thresholds published by the South Coast Air Quality Management District (SCAQMD) in 2006.

Annual mass emissions for each pollutant in tons/year were calculated as follows:

(miles/trip) (dwellings) (trips/dwelling-day) (capture ratio) (g/mile) (365 days/yr) / (454 g/lb) / (2000 lb/ton) = tons/yr

For dispersion modeling input, daily mass emissions for each pollutant in lbs/day were calculated as follows:

(miles/trip) (dwellings) (trips/dwelling-day) (capture ratio) (g/mile) / (454 g/lb) = lbs/day

USEPA's SCREEN3 Version 96043 was used to model the gaussian dispersion of daily vehicle emissions to obtain ambient impacts. For dispersed traffic, a single equilateral area source was modeled to yield maximum potential downwind impact from the equivalent area of the 91-mile weighted average trip distance for a 0.25-mile wide highway corridor with a 1-meter release height, which is conservative. For screening dispersion modeling, the annual average wind speed of 4.8 meters per second (Las Vegas) was assumed for neutral Stability Class D. Since SCREEN3 output is for a 1-hour averaging time, other averaging times for various pollutants comprising 3-hours, 8-hours, 24-hours, and annual were obtained using correction factors published by USEPA in Screening Procedures for Estimating the Air Quality Impact of Stationary Sources (Revised), EPA-454/R-92-019. An increased population base under the Preferred Alternative would result in higher levels of commuter vehicle emissions than under the No Action Alternative. Because current air quality is good, the dispersion of vehicle emissions over a very wide area with no other significant sources of pollution for 20 miles in any direction, air quality would not be expected to exceed state or federal ambient air quality standards in the long term because of a population increase in the area.

5.10.2 Comparative Analysis of Alternatives

5.10.2.1 No Action Alternative

5.10.2.1.1 Direct Effects

If no development were to occur under the No Action Alternative, then no direct effects to air quality would occur.

Under the No Action Alternative, if development by individual landowners were to occur, the rate of development could range from zero acres to up to 29,002 acres depending on the rate at which individual permits were obtained. Therefore, impacts could range from no impacts (i.e., no development) to large impacts (i.e., up to 21,454 acres of development, as well as infrastructure activities on up to 7,548 acres of land) depending on the rate of development permitted each year. However, it would be unlikely that the full 21,454-acre area would be impacted by development, due to lack of existing infrastructure and lack of coordinated planning. On the 7,458 acres of lease lands, only a small portion of the area would be expected to be impacted by roads and other infrastructure.

An assessment of impacts to air quality within the project area were based upon comparing development rates in the Las Vegas Valley with a similar climate and soils as the project area. The record levels of land development set in the 1990s were reported in the PM_{10} SIP for Clark County from disturbed vacant land and construction activities. The number of acres under active construction in 1998 was 19,449 acres. Results of a comprehensive assessment of PM_{10} air quality in the Las Vegas Valley concluded that peak ambient PM_{10} concentrations in the desert valley area typically occur during high-wind conditions (DAQEM 2001). These high concentrations are generated primarily by windblown soil particles from disturbed soil surfaces. Particles are largely available to become airborne due to the relative lack of protective vegetation typical of arid desert climate, the fine texture of the type of soils that are present in the desert valley basin, and the large amount of surface soil disturbance activities occurring in the area. Strong wind-gust events occur generally between April and September, although high winds are also recorded in other months when storms pass through the region. High-wind speeds result from either thunderstorm activity or significant pressure differences between marine

and continental air masses. During such high-wind events, soil particles dominate the PM_{10} measurements, and stations recording the highest concentrations are those typically located near large expanses of disturbed soil.

Therefore, during construction activities, were they to occur, significant emissions of particulate matter could potentially be released into the air because of soil disturbance and other dust-causing activities depending on the rate of development. These emissions would not likely result in exceedences of air quality criteria, given the current baseline air quality level, the limited use of these areas, and the required compliance with local, state, and federal air quality standards.

5.10.2.1.2 Indirect Effects

If no development were to occur as a result of implementing the No Action Alternative, then no indirect effects to air quality would occur.

If as a result of implementing the No Action Alternative, development were to occur in the project area, sources contributing to indirect air emission impacts include diesel and gasoline powered vehicles used for maintenance activities. These emissions may be caused by traffic congestion, which may result from temporary traffic detours. Generally, these detours are expected to be minimal. However, the magnitude may become significant if multiple projects are constructed simultaneously over a long period of time in the same area. If development were to occur after the No Action Alternative was implemented, no detectable net change to greenhouse gases would be anticipated, as residents would likely already own and use vehicles.

5.10.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

5.10.2.2.1 Direct Effects

Under the Preferred Alternative, construction within the Development Area and BLM utility corridor would emit pollutants into the atmosphere during the construction phase. The first step in determining the magnitude of the contribution of various sources is to develop base-line inventories of the pollutants emissions. During development, the main sources that could contribute to ambient concentrations of pollutants within a desert valley like Coyote Spring Valley including:

- Area-wide fugitive emissions from construction activities, disturbed vacant land, vehicle exhaust, paved road dust, unpaved road dust, and other sources that do not emit through a stationary point; and
- Natural or background emissions resulting from physical and climatological conditions that would exist even in the absence of humans. This may be particularly evident in an arid environment like the Coyote Spring Valley where fugitive dust may be emitted from areas of native desert.

A phased approach has been proposed for the construction and development of the community. Total build out of the proposed development would cover approximately 20,716 acres of privately-owned land (Development Area) and an additional disturbance of up to 244 acres in the BLM utility corridor. Full build out may occur over a period of 40 years.

During construction, pollutants would be emitted from commuter traffic, transport truck traffic, construction equipment activities, and fugitive dust.

Sources contributing to the construction phase air emission impacts include diesel powered earthmoving equipment, off-road vehicles, and additional wind-blown fugitive dust during construction activities. Tier I emission factors for the types of equipment typically used during construction are listed in Table 5-7.

Internal combustion engines used during construction would emit NO_x, SO_x, CO, ROC, and PM_{10}. These emissions are usually considered less than significant under most circumstances. Fugitive dust during clearing, grading, and road construction could be considered potentially significant; however, the analysis shows that mitigation would lower fugitive dust emissions to below significance (i.e., no NAAQSs exceeded).

Construction would cause a minor temporary reduction of local ambient air quality due to emissions generated by the construction vehicles and earthwork. Transient emissions during construction activities would occur mainly from fuel combustion in diesel engines and would consist of NO_x, CO, ROC, PM_{10}, small amounts of

SO_2, and very small amounts of toxic air contaminants. Fugitive dust emissions from earthmoving activities would be expected during construction.

Off-site emissions during the construction phase would consist of exhaust emissions and entrained paved road dust from worker commute trips (cars and light trucks) and material delivery trips (heavy trucks) to the construction site. Most of the worker traffic would occur along U.S. Highway 93 north and south of the site, which already has existing surface street traffic patterns and is a well-used travel route for large trucks. Therefore, worker traffic emissions would be unlikely to be a significant source compared to emissions from site construction activities and are not considered in the screening analysis described below.

The overall construction schedule was assumed to average five days per week for eight hours per day. For this analysis, the maximum number of acres disturbed was estimated at 1,000 acres. The fiscal analysis for the Preferred Alternative (Appendix N) estimated the number of acres disturbed per year over the course of the proposed build out, and the largest amount of acres disturbed was 1,055 acres. However, this is only an estimate of acres disturbed. It is possible that a greater number of acres could be disturbed in a given year, although this would be unlikely. Construction emission estimates are summarized in Tables 5-8 and 5-9. Table 5-10 shows that screening air dispersion modeling of estimated construction emissions does not indicate a potential for significant impact. Since construction is a temporary source, it is not anticipated that conducting refined air dispersion modeling of the ambient impacts associated with construction would be required.

Table 5-8 Estimated Earthmoving Emissions in Pounds Per Day

	NO_X	SO_X	CO	$PM_{10/2.5}$	ROC	Fugitive $PM_{10/2.5}$
Pounds per Day	1,490	1.0	1,830	90	220	150

Table 5-9 Estimated Earthmoving Emissions in Tons Per Year, Assuming a Maximum of 1,000 Acres Per Year

	NO_X	SO_X	CO	$PM_{10/2.5}$	ROC	Fugitive $PM_{10/2.5}$
Tons per Year	95	0. 05	115	5	15	10

Table 5-10 Modeled Estimated Air Quality Impacts, Assuming a Maximum of 1,000 Acres Per Year

Criteria Pollutant	Averaging Period	Modeled Concentration (µg/m3)	Background Concentration (µg/m3)	Total Concentration (µg/m3)	State and Federal Standard (µg/m3)
Nitrogen Oxides (as NO_2)	Annual	6	9.45	15.5	100
Sulfur Dioxide (SO_2)	3-hour	0.045	15.5	15.5	1300
	24-hour	0.02	10.4	10.5	365
	Annual	0.005	6	6	80
Carbon Monoxide (CO)	1-hour max	90	4628.5	4718.5	40,000
	8-hour	63	3666.5	3729.5	10,000
Particulates (as PM_{10})	24-hour	41.45	206.5	248	150
Particulates (as $PM_{2.5}$)	24-hour	14.7	42.5	57	35
	Annual	2.95	5.85	8.8	15

Development has been shown to directly affect PM_{10} and $PM_{2.5}$ emissions from disturbed vacant land and construction activities; therefore, fugitive dust emissions could be considered significant. As such, construction mitigation measures would control (reduce) fugitive dust emissions. These mitigation measures would reduce the project-generated air quality effects to less-than-significant levels. Thus, no other mitigation measures would be required.

5.10.2.2.2 Indirect Effects

LOCAL VEHICLE TRAFFIC

Sources contributing to indirect air emission impacts include diesel and gasoline powered vehicles in day to day local traffic activities. These emissions may be caused by traffic congestion, which may result from temporary traffic detours. Generally, these detours are expected to be minimal. However, the magnitude may become significant if multiple projects are constructed simultaneously over a long period of time in the same area.

An increased population base under the Preferred Alternative would result in higher levels of vehicle emissions than under the No Action Alternative. Because current air quality is good, the dispersion of vehicle emissions over a very wide area with no other significant sources of pollution for 20 miles in any direction, air quality would not be expected to exceed state or federal ambient air quality standards in the long term as a result of a population increase in the area.

Emissions from increased vehicle traffic under the Preferred Alternative are estimated using URBEMIS 2007 and are based on the conceptual 35 year project plan divided into 5-year increments. The estimate takes into account increasingly stringent vehicle emission standards in future years along with projected demographic changes in vehicle mix over time. Tables 5-11 and 5-12 summarize approximate vehicle emissions in tons per year and pounds per day from project inception to maturity, respectively. Table 5-13 shows that screening air dispersion modeling of maximum estimated traffic emissions does not indicate a potential for significant impact. Since traffic is a dispersed mobile source, it is not anticipated that conducting refined air dispersion modeling of the ambient impacts associated with traffic would be required.

Table 5-11 Estimated Approximate Annual Traffic Emissions for Preferred Alternative by Year (URBEMIS 2007)

Project Year	Completion Percent	NO_X tons/yr	SO_X tons/yr	CO tons/yr	PM_{10} tons/yr	$PM_{2.5}$ tons/yr	ROC tons/yr
5	6 percent	132	1	941	137	28	88
10	20 percent	275	3	2,084	453	90	201
15	40 percent	356	5	2,912	904	177	303
20	63 percent	419	9	3,700	1,422	278	408
25	80 percent	446	11	4,051	1,804	352	461
30	94 percent	464	13	4,285	2,120	414	487
35	100 percent	469	14	4,244	2,256	440	479

Table 5-12 Estimated Approximate Daily Traffic Emissions for Preferred Alternative by Year (URBEMIS 2007)

Project Year	Completion Percent	NO_X lbs/day	SO_X lbs/day	CO lbs/day	PM_{10} lbs/day	$PM_{2.5}$ lbs/day	ROC lbs/day
5	6 percent	725	4	5,158	749	152	483
10	20 percent	1,508	15	11,417	2,483	493	1,102
15	40 percent	1,951	30	15,958	4,951	972	1,660
20	63 percent	2,294	47	20,274	7,789	1,523	2,237
25	80 percent	2,442	60	22,199	9,887	1,930	2,526
30	94 percent	2,545	71	23,482	11,618	2,267	2,667
35	100 percent	2,570	76	23,254	12,362	2,413	2,625

Table 5-13 Modeled Estimated Air Quality Impacts for Preferred Alternative Maximum Traffic

Criteria Pollutant	Averaging Period	Modeled Concentration ug/m3	Background Concentration ug/m3	Total Concentration ug/m3	State and Federal Standard ug/m3
Nitrogen Oxides (as NO_2)	Annual	0.45	9.45	9.90	100
Sulfur Dioxide (SO_2)	3-hour	0.15	15.5	15.7	1300
	24-hour	0.07	10.4	10.5	365
	Annual	0.01	6	6	80
Carbon Monoxide (CO)	1-hour max	51.07	4628.5	4679.6	40,000
	8-hour	35.75	3666.5	3702.2	10,000
Particulates (as PM_{10})	24-hour	10.86	206.5	217.4	150
	Annual	2.17	16.5	18.7	50
Particulates (as $PM_{2.5}$)	24-hour	2.12	42.5	44.6	65
	Annual	0.42	5.85	6.27	15

COMMUTER TRAFFIC

According to the Carter Burgess Coyote Springs Master Traffic Study and the Carter Burgess Clark County Traffic Study Presentation for the proposed project, emission sources contributing to indirect effects on air quality include diesel and gasoline powered light- and heavy-duty vehicles traveling mainly between the Development Area and the employment and entertainment centers in the Las Vegas, North Las Vegas and Henderson areas using US-93. The traffic studies listed other commuter traffic sources , to a lesser extent, from the Mesquite, Logandale and Overton employment centers (north on I-15), from the Glendale and Moapa employment centers (SR-168) with only 2 percent of the commuter traffic using US-93 from the north of the Development Area (Carter Burgess 2006, Appendix O).

Emissions from increased commuter vehicle traffic under the Preferred Alternative are estimated using these traffic studies, URBEMIS 2007, and EMFAC 2007 using the commuter traffic emissions estimation methodology discussed in Section 5.10.1: Evaluation Criteria. Based on the methodology, the estimate takes into account increasingly stringent vehicle emission standards in future years along with projected demographic changes in vehicle mix over time. Tables 5-14 and 5-15 summarize approximate vehicle emissions in tons per year from the lower and upper range of commuter trips, respectively.

The Las Vegas region is in non-attainment for three pollutants: CO, PM10, and 03. The Clark County DAQEM is tasked with SIP development that defines strategies to ensure the existing and future attainment of the NAAQS. The SIP also establishes a mobile source emissions budget that is used in the evaluation of transportation plan conformity. These commuter traffic emission estimates are well below the mobile source emissions budgets defined in the SIPs for Clark County and the predicted tailpipe emissions from the commuter travel to/from the Development Area are well below the budget thresholds for all of the horizon years that comprise the Clark County Regional Transportation Plan.

Table 5-14 Estimated Commuter Traffic Emissions, Lower Range, Tons per Year

Criteria Pollutant or Greenhouse Gas	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Reactive Organic Gases (ROG)	15.5	38.0	38.4	15.7	11.4
Carbon Monoxide (CO)	140.6	338.1	350.8	150.8	113.2
Nitrogen Oxides (NO_X)	17.0	29.2	31.6	14.7	11.8
Sulfur Dioxide (SO_2)	0.4	1.0	1.1	0.5	0.4
Particulate Matter (as PM_{10})	1.7	4.1	4.3	2.0	1.6
Particulate Matter (as $PM_{2.5}$)	1.7	4.0	4.3	2.0	1.6
Carbon Dioxide (as GHG CO_2)	41,635	103,939	109,443	51,904	41,403

Table 5-15 Estimated Commuter Traffic Emissions, Upper Range, Tons per Year

Criteria Pollutant or Greenhouse Gas	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Reactive Organic Gases (ROG)	54.1	132.8	134.5	55.1	39.9
Carbon Monoxide (CO)	492.0	1183.4	1227.8	527.9	396.4
Nitrogen Oxides (NO_X)	59.4	102.3	110.6	51.5	41.1
Sulfur Dioxide (SO_2)	1.5	3.6	3.8	1.8	1.4
Particulate Matter (as PM_{10})	5.8	14.3	15.2	7.1	5.6
Particulate Matter (as $PM_{2.5}$)	5.8	14.2	15.0	7.0	5.6
Carbon Dioxide (as GHG CO_2)	145,724	363,786	383,051	181,663	144,910

Table 5-16 shows that screening air dispersion modeling of maximum estimated traffic emissions are well below the air quality standards and does not indicate a potential for significant impact. Since these screening model results show no significant air quality impact, no refined air dispersion modeling of the ambient impacts associated with traffic would be required.

Table 5-16 Modeled Estimated Air Quality Impacts for Upper Range Maximum Traffic

Criteria Pollutant	Averaging Period	Modeled Concentration µg/m3	Background Concentration µg/m3	Total Concentration µg/m3	State and Federal Standard µg/m3
Nitrogen Oxides (as NO_2)	Annual	0.15	9.45	9.60	100
Sulfur Dioxide (SO_2)	3-hour	0.06	15.5	15.6	1300
	24-hour	0.03	10.4	10.4	365
	Annual	0.01	6	6	80
Carbon Monoxide (CO)	1-hour max	20.64	4628.5	4649.1	40,000
	8-hour	14.45	3666.5	3681.0	10,000
Particulates (as PM_{10})	24-hour	0.10	206.5	206.6	150
	Annual	0.02	16.5	16.5	50
Particulates (as $PM_{2.5}$)	24-hour	0.10	42.5	42.6	65
	Annual	0.02	5.85	5.87	15

Ground-level ozone is the byproduct of chemical reactions between volatile organic compounds (VOCs) or ROG and NO_X in the presence of sunlight. While it is not possible to predict ozone levels associated with a single project, it is possible to provide a project-level estimate of these ozone precursors involved in the formation of ozone. One significant source of these precursors is motor vehicles. Increased emissions of VOCs and NO_X resulting from commuter traffic to/from the Development Area would have the potential to combine with other pollutant sources in the Development Area and may result in increased ozone levels.

Tables 5-14 and 5-15 show an estimate of the increase (by development phases) in tons per year for VOC and NO_X as a result of the commuter traffic to/from the Development Area. These emission increases do not represent a direct increase in ozone in the Development Area since ozone formation is also greatly influenced by wind transport. The impacts from commuter vehicle emissions on air quality would be minor due to the relatively small potential increases in the VOC and NO_x emissions and the lack of major sources of VOCs and NO_x (e.g. hydrocarbon storage facilities, spray painting operations etc.) in the project area. In addition, these commuter traffic emissions do not represent a significant increase of VOC and NO_X emissions in the region and is not expected to preclude the region from meeting NAAQS attainment standards for ozone.

OFF-HIGHWAY VEHICLE

Off-highway vehicle recreation is one of many ways to enjoy the Southern Nevada landscape with acres of opportunities on public lands. Due to population growth in the Las Vegas valley and surrounding communities

and the growing popularity of off highway and all terrain vehicles, use within BLM lands has increase. The Las Vegas Proposed RMP/FEIS (May 1998) estimated that approximately 73,300 visitors used off-road vehicles in the Southern Nevada area during 1994. Increased off-highway vehicle use in the Developed Area as a result of an increased population base would be limited by public land use restrictions and more likely occur in designated OHV use areas within the region.

There are many designated OHV use areas within the region For example, approximately 1,326,864 acres in southern Nevada south of Las Vegas, between the California border and Lake Mead National Recreation Area, known as the Clark County Special Recreation Management Area, is designated to provide for off-road vehicle recreation opportunities. The Spring Mountains Special Recreation Management Area encompasses approximately 566,701 acres in southern Nevada, west of Las Vegas and southeast of the Nevada Test Site.

To the north of the Development Area, the BLM Ely Office offers the Chief Mountain OHV Area. The south access point is conveniently located at Oak Springs Summit on the north side of U.S. Highway 93 about five miles west of Caliente, Nevada.

By comparison, the Development Area and adjacent lands have limited OHV recreational opportunities. CSI has designated approximately 7,548 acres in Lincoln County and 6,219 acres in Clark County, for a total of 13,767 acres that would be managed by BLM which could provide OHV recreational opportunities. However, pursuant to terms of the lease, CSI, as the lessee, is obligated to prohibit the use of any recreational off-road and all terrain vehicles. In addition, there are opportunities on BLM and USFWS managed lands adjacent to the CSI lands. This includes USFWS Desert National Wildlife Range. Directly adjacent BLM lands are two ACEC: Kane Springs, and Mormon Mesa, while Coyote Spring ACEC is nearby. There are currently approximately 906 miles of routes located within the six ACECs in the northeast Clark County. However, casual (non-organized) OHV use is limited to roads and vehicle trails designated for OHV use. These areas are closed to speed competitive OHV use and are closed to organized OHV events from March 15 to June 15 and from August 31 to October 15 (BLM 2000). Other nearby BLM lands include the Meadow Valley Range Wilderness to the east and the Arrow Canyon Wilderness to the south but are closed to mechanized and motorized vehicles.

Increased off-highway vehicle (OHV) use in the area as a result of an increased population base would be likely and would result in localized, infrequent emissions and increases in fugitive dust. OHV components of BLM's Resource Management Plans (RMPs) for the Ely and Las Vegas Districts include management actions related to OHV use, which address air quality issues of OHV use allowed on BLM lands surrounding the proposed CSI Development and adjacent ACECs (where OHV use is very limited). Tables 5-17 and 5-18 summarize approximate restricted-use OHV emissions in tons per year and pounds per day from project inception to maturity, respectively.

Table 5-17 Estimated Approximate Annual Restricted-Use OHV Emissions for Preferred Alternative by Year

Project Year	Completion Percent	NO_X tons/yr	SO_X tons/yr	CO tons/yr	PM_{10} tons/yr	Dust PM_{10} tons/yr	ROC tons/yr
5	6 percent	0.2	0.00	24	0.0	12	0.5
10	20 percent	0.8	0.00	80	0.1	41	1.5
15	40 percent	1.7	0.00	160	0.1	83	3.1
20	63 percent	2.6	0.01	252	0.2	130	4.8
25	80 percent	3.3	0.01	321	0.2	166	6.1
30	94 percent	3.9	0.01	377	0.3	194	7.2
35	100 percent	4.1	0.01	401	0.3	207	7.7

Table 5-18 Estimated Approximate Daily Restricted-Use OHV Emissions for Preferred Alternative by Year

Project Year	Completion Percent	NO_X lbs/day	SO_X lbs/day	CO lbs/day	PM_{10} lbs/day	Dust PM_{10} lbs/day	ROC lbs/day
5	6 percent	1	0.00	132	0.1	68	3
10	20 percent	5	0.01	439	0.3	227	8
15	40 percent	9	0.02	878	0.6	453	17
20	63 percent	14	0.03	1,383	1.0	714	27
25	80 percent	18	0.04	1,756	1.3	907	34
30	94 percent	21	0.04	2,064	1.5	1,066	40
35	100 percent	23	0.05	2,195	1.6	1,134	42

In general, the estimates show that OHV emissions are an order of magnitude lower than traffic emission estimates, are likely to occur over a wide area and not likely to occur in the immediate vicinity of the Development Area. Therefore, the air quality impact due to increased OHV is not expected to result in a significant reduction in ambient air quality levels.

GLOBAL CLIMATE CHANGE

While the CSI Development in Lincoln County would contribute non-significant levels of increased air emissions in the Coyote Spring Valley, the CSI Development would likely not result in a detectable net increase in greenhouse gas emissions, as people relocating to the CSI Development are already likely to have on and off-road vehicles. Because the community is anticipated to be somewhat self-sufficient, providing consumer goods and employment needs for residents, it is not anticipated that the CSI Development would result in overall increased vehicle use in residents from previous locations. Construction equipment could contribute low amounts of carbon dioxide during construction activities, but best management practices would limit these amounts as possible.

5.10.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

As described for the Preferred Alternative, temporary effects to air quality from particulate matter and hydrocarbon emissions would be likely to occur. Because the full build out of the planned community could occur without time restrictions, the potential exists for greater amounts of exposed soils in a given year than under the Preferred Alternative. Mitigation measures would include planning sequencing of activities in the short term to have as limited of large areas of soil exposed as possible. While this would result in greater effects than under the Preferred Alternative due to the greater amount of acres cleared and developed per year, these mitigation measures would reduce the potential for particulate matter to be released into the air. Because of the existing high air quality and reduction in potential effects from best management practices (mitigation measures), effects would be unlikely to exceed air quality standards. Therefore, effects, while temporarily adverse, would not be considered substantial.

Should potentially polluting industries lease areas, all local, state, and national criteria would be met to limit the amount of emissions into the air. Therefore, in the long term, air quality criteria would not be exceeded as a result of development of the CSI lands in Lincoln County and long- term effects would not be considered significant.

INDIRECT EFFECTS

Indirect effects would be slightly higher than those described for the Preferred Alternative, as the population level within the project area would be higher.

Sources contributing to indirect air emission impacts include diesel and gasoline powered vehicles used for construction and maintenance activities and for commuting. These emissions may be caused by traffic

congestion, which may result from temporary traffic detours. Generally, these detours are expected to be minimal. However, the magnitude may become significant if multiple projects are constructed simultaneously over a long period of time in the same area. Because the full build out of the planned community could occur without time restriction. Similarly, the potential exists for greater amounts of commuter traffic in a given year than under the Preferred Alternative

An increased population base under Alternative 1 would result in higher levels of vehicle emissions than under the No Action Alternative or the Preferred Alternative. Because current air quality is good, the dispersion of vehicle emissions over a very wide area with no other significant sources of pollution for 20 miles in any direction, air quality would not be expected to exceed state or federal ambient air quality standards in the long term as a result of a population increase in the area.

Emissions from increased vehicle traffic under Alternative 1 are estimated using URBEMIS 2007 and are based on the conceptual 35 year project plan divided into 5-year increments. The estimate takes into account increasingly stringent vehicle emission standards in future years along with projected demographic changes in vehicle mix over time. Tables 5-19 and 5-20 summarize approximate vehicle emissions in tons per year and pounds per day from project inception to maturity, respectively. Table 5-21 shows that screening air dispersion modeling of maximum estimated traffic emissions does not indicate a potential for significant impact. Since traffic is a dispersed mobile source, it is not anticipated that conducting refined air dispersion modeling of the ambient impacts associated with traffic would be required.

Table 5-19 Estimated Approximate Annual Traffic Emissions for Alternative 1 by Year (URBEMIS 2007)

Project Year	Completion percent	NOX tons/yr	SOX tons/yr	CO tons/yr	PM10 tons/yr	PM2.5 tons/yr	ROC tons/yr
5	6 percent	158	1	1,125	163	33	105
10	20 percent	329	3	2,491	542	108	241
15	40 percent	426	6	3,482	1,080	212	362
20	63 percent	500	10	4,424	1,699	332	488
25	80 percent	533	13	4,843	2,157	421	551
30	94 percent	555	15	5,123	2,535	495	582
35	100 percent	561	17	5,074	2,697	527	573

Table 5-20 Estimated Approximate Daily Traffic Emissions for Alternative 1 by Year (URBEMIS 2007)

Project Year	Completion Percent	NO_X lbs/day	SO_X lbs/day	CO lbs/day	PM_{10} lbs/day	$PM_{2.5}$ lbs/day	ROC lbs/day
5	6 percent	867	5	6,166	896	181	577
10	20 percent	1,803	18	13,649	2,969	590	1,318
15	40 percent	2,333	36	19,078	5,919	1,162	1,985
20	63 percent	2,742	56	24,239	9,312	1,821	2,674
25	80 percent	2,919	72	26,540	11,821	2,307	3,019
30	94 percent	3,042	84	28,074	13,890	2,710	3,188
35	100 percent	3,072	91	27,801	14,780	2,885	3,138

Table 5-21 Modeled Estimated Maximum Air Quality Impacts for Alternative 1 Maximum Traffic

Criteria Pollutant	Averaging Period	Modeled Concentration µg/m³	Background Concentration µg/m³	Total Concentration µg/m³	State and Federal Standard µg/m³
Nitrogen Oxides (as NO_2)	Annual	0.54	9.45	9.99	100
Sulfur Dioxide (SO_2)	3-hour	0.18	15.5	15.7	1300
	24-hour	0.08	10.4	10.5	365
	Annual	0.02	6	6	80
Carbon Monoxide (CO)	1-hour max	61.05	4,628.5	4,689.6	40,000
	8-hour	42.74	3,666.5	3,709.2	10,000
Particulates (as PM_{10})	24-hour	12.98	206.5	219.5	150
	Annual	2.60	16.5	19.1	50
Particulates (as $PM_{2.5}$)	24-hour	2.53	42.5	45.0	65
	Annual	0.51	5.85	6.36	15

An increased population base under Alternative 1 would result in higher levels of OHV emissions than under the No Action Alternative or the Preferred Alternative.

Effects from greenhouse gas emissions would be very similar to those described for the Preferred Alternative.

5.11 TRANSPORTATION AND CIRCULATION

5.11.1 Evaluation Criteria

U.S. Highway 93, State Route 168, and I-15 are under the jurisdiction of NDOT. Evaluation criteria for traffic on these roadways are to maintain a minimum LOS of C as set by the NDOT and the Coyote Springs Development Agreement.

Roads internal to the proposed project area would be under the jurisdiction of the Coyote Springs PUD. On-site roadways are to maintain a minimum LOS of D as set in the Coyote Springs Development Agreement Section 7.02(a)(ii)(2).

Level of service (LOS) is the function of overall wait time for vehicles to pass through an intersection. A LOS of C is considered stable flow. At an unsignaled intersection, it would take 20 to 35 seconds to pass through an intersection, while at a signaled intersection, it would take 15 to 25 seconds. A LOS of D is considered to be approaching unstable flow. At an unsignaled intersection, it would take 35 to 55 seconds to pass through an intersection, while at a signaled intersection, it would take 25 to 35 seconds (TRB 2000).

5.11.2 Comparative Analysis of Alternatives

5.11.2.1 No Action Alternative

Kane Springs Road, a Lincoln County road, is the only public roadway within the Development Area. No other public roadway currently exists within the Development Area. U.S. Highway 93 lies along the western boundary of the Development Area. Regional access to the project area would be primarily from the south via U.S. Highway 93, State Route 168, or Interstate 15 (I-15) (see Figure 1-1). These roadways currently operate at a LOS of C or better.

DIRECT EFFECTS

Under the No Action Alternative, the proposed project would not be implemented.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and

Section 404 permits. If development were to occur in the project area, then new roads would be constructed by individual landowners. A lack of coordination could result in localized adverse effects on circulation.

If residential units are constructed on these sites, traffic would increase on U.S. Highway 93. Without a comprehensive planning process in place, developing traffic control measures may not occur or measures may be insufficient to address increases in traffic. As a result, increases in traffic may result in a LOS lower than C.

INDIRECT EFFECTS

No indirect effects would be expected under the No Action Alternative.

5.11.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

The Preferred Alternative proposes a maximum of 111,000 residential dwelling units and up to 2,145 acres of commercial development. Covered activities under the Preferred Alternative would be phased over a period of up to 40 years. CSI's plans are to develop a project where the community would become self-sufficient and therefore internalize more of its traffic trips over time. Proposed schools, employment, and retail commercial uses in Clark County would be built first and provide needed services to the growing population. The proposed improvements and triggers were based on a Master Traffic Study (2006) by Carter Burgess (Appendix O) for the CSI development in Clark County. The study analyzed trip generation, internal versus external trip analysis, trip distribution, and roadway capacity. During the first three phases of the Clark County portion, most of the off-site transportation improvements are expected to be triggered by actual external trips and implemented as trip counts reached each threshold. Detailed description of the improvements and the external trip thresholds for improvements are in the 2006 traffic study (Appendix O). These off-site transportation improvements and triggers, as approved by NDOT, would be made part of the Preferred Alternative.

The Preferred Alternative includes a measure to review, maintain and cure off-site LOS issues (the Coyote Springs DA Section 7.02(e). The measure states that:

> *"If District or NDOT find that minimum service levels as set forth in Section 7.02(a) are not being met, owner shall be required to submit traffic mitigation plans in coordination with NDOT and District within one-hundred-twenty (120) days showing how owner shall meet minimum service levels as required herein. Such traffic mitigation plans shall provide:*
>
> *(i) Design and specifications as necessary to bring off-site improvements to minimum service levels and;*
>
> *(ii) A schedule for when required off-site improvements will be implemented."*

The Preferred Alternative would construct a new road system within the proposed development to serve new land uses. Since no traffic currently exists within the development area, potential traffic impacts would be dependent on the final design of the development, roadway layout, and occupancy rate. Minimum on-site traffic service level in the Coyote Springs DA (Section 7.02(a)(ii)(2)) states that:

> *"(2) For any on-site improvements to roadways and intersections as described in Section 7.03, owner will be responsible for providing a minimum service level of "D" as defined in The Highway Capacity Manual."*

DIRECT EFFECTS

On-site design is only at a conceptual level at the preparation of this document. CSI's commitment to maintaining a LOS of C on all internal roads would ensure that roadway capacity would be designed commensurate to the land use it serves.

The Preferred Alternative would have a less-than-significant effect on on-site transportation and circulation.

SHORT-TERM CONSTRUCTION EFFECTS

Little detail is available on the number and frequency of construction truck and worker related traffic trips to determine the potential short-term impact. The Preferred Alternative does not currently include any measures

to minimize construction-related traffic impacts to off-site traffic. However, the off-site traffic improvements triggered by thresholds of actual traffic monitoring results for their implementation may potentially mitigate short-term construction-related traffic effects. The phasing would additionally moderate the number of construction-related traffic added to off-site highways.

Under the Preferred Alternative, short-term construction traffic would have a less-than-significant effect on off-site transportation and circulation.

INDIRECT EFFECTS

The indirect effects of the Preferred Alternative would be the addition of traffic trips to offsite highways. The Preferred Alternative includes off-site traffic improvements triggered by thresholds of actual traffic monitoring results. Combined with the development agreement between Lincoln County and CSI, these measures are designed to maintain the off-site highways to operate at a LOS of C on U.S. Highway 93 and LOS of D on State Route 168.

Under the Preferred Alternative, indirect effects of adding traffic trips to off-site highways would have a less-than-significant effect on off-site transportation and circulation.

5.11.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

Alternative 1 includes a maximum of 131,879 residential dwelling units and up to 2,145 acres of commercial development. All Covered Activities and infrastructure and development construction would initiate immediately upon project and permit approval.

Alternative 1 includes a measure to review, maintain, and cure LOS issues (the Coyote Springs Development Agreement Section 7.02(e)). The measure states that:

> *"If District or NDOT find that minimum service levels as set forth in Section 7.02(a) are not being met, owner shall be required to submit traffic mitigation plans in coordination with NDOT and District within one-hundred-twenty (120) days showing how owner shall meet minimum service levels as required herein. Such traffic mitigation plans shall provide:*
>
> *(i) Design and specifications as necessary to bring off-site improvements to minimum service levels and;*
>
> *A schedule for when required off-site improvements will be implemented."*

Off-site transportation improvements and triggers as approved by NDOT would be made part of Alternative 1.

DIRECT EFFECTS

On-site design is only at a conceptual level at the preparation of this document. CSI's commitment to maintaining a LOS of D on all internal roads would ensure that roadway capacity would be designed commensurate to the land use it serves.

Alternative 1 would have a less than significant effect on on-site transportation and circulation.

SHORT-TERM CONSTRUCTION EFFECTS

Little detail is available on the number and frequency of construction truck and worker-related traffic trips to determine the potential short-term impact. Alternative 1 does not currently include any measures to minimize construction-related traffic impacts to off-site traffic. However, the off-site traffic improvements triggered by thresholds of actual traffic monitoring results for their implementation may potentially mitigate short-term construction-related traffic effects.

Under Alternative 1, short-term construction traffic would have a less-than-significant effect on off-site transportation and circulation.

INDIRECT EFFECTS

The indirect effects of Alternative 1 would be the addition of traffic trips to off-site highways. Alternative 1 includes off-site traffic improvements triggered by thresholds of actual traffic monitoring results. Combined with the development agreement between Lincoln County and CSI, these measures are designed to maintain the off-site highways to operate at a LOS of C on U.S. Highway 93 and LOS of D on State Route 168.

Under Alternative 1, indirect effects of adding traffic trips to off-site highways would have a less-than-significant effect on off-site transportation and circulation.

5.12 NOISE

5.12.1 Evaluation Criteria

5.12.1.1 Regulatory Framework

The Preferred Alternative will comply with all applicable laws, ordinances, regulations and standards related to noise quality during and following construction. Applicable laws, ordinances, regulations and standards, summarized below, are not expected to change prior to completion of the CSI proposed project in Lincoln County.

5.12.1.1.1 Federal

In 1974, EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." This document provides information for state and local governments to use in developing their own ambient noise standards. EPA determined that a day-night sound level (Ldn) of 55 dBA protects the public from indoor and outdoor activity interference.

The EPA, FAA, Federal Highway Administration, and United States Department of Transportation (USDOT) each have developed guidelines for noise. Under the authority of the Noise Control Act of 1972, the EPA established noise emission criteria and testing methods, published at 40 CFR Part 204, which apply to interstate rail carriers, and some construction and transportation equipment (i.e., portable air compressors, medium- and heavy-duty trucks, etc.).

5.12.1.1.2 State

Sections 244.363 and 268.412 of the NRS address the prevention of excessive noise by stating that the boards of county commissioners may adopt county-level ordinances to enact, regulate, control and prohibit, as a public nuisance, excessive noise considered injurious to health or unreasonably interfering with the comfortable enjoyment of life or property within the boundaries of the county.

5.12.1.1.3 Local

The Lincoln County Code does not address noise.

5.12.2 Comparative Analysis of Alternatives

5.12.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects to noise would occur from actions under the No Action Alternative, as no new noise sources would be developed.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and Section 404 permits. If development were to occur by individual landowners, then Short-term and long-term noise levels would increase as a result of construction activities and human residence in the area. These noise levels

would likely be similar to, but of smaller intensity, than noise effects described in more detail under the Preferred Alternative, as potentially less development would occur if it involved seeking individual permits for each project.

INDIRECT EFFECTS

No indirect effects to noise would occur from actions under the No Action Alternative, as no new noise sources would be developed.

If private CSI lands were sold to individual landowners, as anticipated in the event that the No Action Alternative is chosen, development of individual parcels would result in \ potential indirect impacts from noise including the vehicles that would be traveling to and from the construction site. The project area is remote, and although some construction workers may be stationed nearby, most would likely be traveling from some distance, resulting in increased noise levels along freeways, highways and access routes. Construction workers would be the only humans affected by increased noise levels, as there are no residents at the site. These effects would be temporary and less than significant.

Development of the individual parcels could also result in increased use of OHVs on nearby public lands, outside of the ACECs and Desert NWR, where OHVs are prohibited. OHVs can contribute noise levels of up to 100 dB for short distances (less than a mile) from the vehicle itself. Because the OHVs would operate under the existing Resource Management Plans for the Ely and Las Vegas districts, noise levels would be properly managed and would not be considered significant.

5.12.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

Development of the CSI lands would result in long-term increased noise levels in these areas. The CSI lands currently have limited sources of human noise, from vehicle use of U.S. Highway 93, adjacent to these lands. Development would result in long-term noise levels equivalent to quiet residential areas (40 to 50 dB, NIDCD No date). While there is no baseline soundscape data, environmental sources of wind and animal sounds would likely be the main contributors of natural sounds. While noise levels would increase, these levels would not be considered substantial, as there would be no greater noise levels present elsewhere in Lincoln County.

Short-term increases in noise levels would result from the use of heavy equipment in construction efforts on the CSI lands. Equipment operation is the primary noise source associated with construction activities for creating the planned community. Noise levels are dependent on several factors, including the number of machines operating within an area at a given time and the distance between the source(s) and receiving properties. Typically, noise generated from construction activities ranges between 80 and 90 dBA 50 feet from an active construction area, as illustrated by Table 5-22 (Bolt 1971). The nearest residential properties are located approximately 20 miles from the project area. Sound levels would be attenuated with distance from the source by a variety of mechanisms, but the most significant of these mechanisms is the diversion of sound waves with distance from the source (attenuation by divergence). In general, this mechanism results in a 6 dBA decrease in the sound level with every doubling of distance from the source. Therefore, at 100 feet from the source, construction activity would result in noise levels ranging from 68 to 78 dBA, and at 200 feet from the source, a range from 56 to 66 dBA. This is nearly equivalent to the maximum daytime decibel (dB) levels within business and industrial districts in 65 dBA (referred to for comparison only as a conservative example).

Table 5-22 Typical Noise Levels at Construction Sites

Construction Phase	Average Noise Level at 50 Feet	
	Minimum Required Off-road Equipment	All Pertinent Equipment On-site
Clearing	84 dBA	84 dBA
Excavation	78 dBA	88 dBA
Paving	78 dBA	79 dBA

Source: Bolt, Beranek and Newman, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, prepared for the U.S. Environmental Protection Agency, 1971.

No noise regulations are included in the Lincoln County Code. The project area is currently undeveloped. Workers employed for construction activities associated with the alteration of the washes would be exposed to increased noise levels during construction; however, the exposure would be short-term and temporary, and mitigation measures would be suggested to reduce noise from the construction equipment. The nearest residents are within the community of Moapa, Nevada, approximately 20 miles to the southeast.

The Preferred Alternative would result in a temporary increase in the ambient noise level due to construction activities. However, there are no sensitive receptors in the project area, and therefore there would be no impact.

INDIRECT EFFECTS

Potential indirect impacts from noise include the vehicles that would be traveling to and from the construction site for which no significant impacts would result. The project area is remote, and although some construction workers may be stationed nearby, most would likely be traveling from some distance, resulting in increased noise levels along freeways, highways and access routes. Construction workers would be the only humans affected by increased noise levels, as there are no residents at the site. These effects would be temporary and less than significant.

Development of CSI lands could also result in increased use of OHVs on nearby public lands. OHVs can contribute noise levels of up to 100 dB for short distances (less than a mile) from the vehicle itself. Because the OHVs would operate under the existing Resource Management Plan for the Ely District, noise levels would be properly managed and would not be considered significant.

5.12.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

Direct effects of Alternative 1 would be expected to be similar to those of the Preferred Alternative, as the same types of activities would occur. However, the short-term potential for noise creation could be greater if construction activities would occur simultaneously across greater acreages within the CSI lands. Because noise is additive, these construction activities could result in a greater overall noise over a shorter amount of time. In addition, with 20,879 additional residential dwelling units and development activities occurring on the lease lands, long-term noise levels would be higher.

INDIRECT EFFECTS

Indirect effects would be the same as described for the Preferred Alternative.

5.13 LAND USE, PLANNING, AND ZONING

5.13.1 Evaluation Criteria

Development of WOUS crossings must not result in land use pattern changes within the Development Area and on adjacent public land beyond those allowed by federal, State, and local jurisdictions. The PUD has a Specific Plan that identifies the standards and criteria for the CSI development including densities and uses of

the property. Specific zoning will be designated following Lincoln County Code Title 15 (Coyote Springs PUD Code) and the development agreement with Lincoln County for the property.

5.13.2 Comparative Analysis of Alternatives

5.13.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects to land use, planning, and zoning would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and Section 404 permits.

If development were to occur on individual parcels, then new development codes and development agreements would need to be developed prior to development. A development code (Title 15 of the Lincoln County Code) has already been adopted but would be repealed.

All actions would occur within the framework of Lincoln County's land use, planning, and zoning, whether or not a development agreement between a developer and Lincoln County was required. Therefore, no adverse direct effects would occur as a result of this alternative.

INDIRECT EFFECTS

No indirect effects to land use, planning, and zoning would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. Indirect effects to land use, planning, and zoning from development by individual landowners would be unlikely, as all actions would occur within the framework of Lincoln County's land use, planning, and zoning ordinances and regulations.

5.13.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

The Preferred Alternative would result in the conversion of undeveloped land within the Development Area to a mix of commercial and residential land uses. These actions would occur within the framework of Lincoln County's zoning ordinances, including a PUD Code specific to the CSI lands. Therefore, no adverse effects to planning and zoning would occur as a result of development within the Development Area. Actions within the BLM lands would be in accordance with the Land Lease Agreement, pursuant to the Nevada-Florida Land Exchange Act of 1988, and the CSI MSHCP, to protect and minimize any threat to federally listed endangered or threatened species.

WOUS impacted during development activities would be expanded in other areas. The existing land use of the Development Area would change from open, undeveloped and inaccessible land to a mix of residential, commercial and recreational land uses. The change in land use for affected WOUS would be offset by the expanded capacity of the remaining channels. Therefore, the Preferred Alternative would result in no significant impacts to land use.

INDIRECT EFFECTS

Development of the CSI property would not result in indirect effects to land use, planning, and zoning, as its development would not result in increased development in the adjacent areas. The surrounding property is not private land nor identified for disposal by the BLM.

5.13.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

Direct effects would be similar to those described for the Preferred Alternative. However, because lease lands would not be placed in the CSICL, these lands would be developed in accordance with the Land Lease Agreement. All zoning and planning regulations would be followed. No adverse effects would result.

INDIRECT EFFECTS

As described for the Preferred Alternative, no indirect effects to land use, planning, and zoning would occur under Alternative 1.

5.14 RECREATION RESOURCES

5.14.1 Evaluation Criteria

There are no specific quantitative or qualitative evaluation criteria in Lincoln County for recreation activities on private land. Recreation activities were analyzed to consider whether existing or planned parks would be deleted or relocated, whether such deletion or relocation would have adverse effects on the ability of local jurisdictions to provide adequate park facilities to residents of the region, and whether substantial lands that are not currently providing recreational facilities were converted into recreational facilities. An assumption regarding the distance residents would travel for recreation (a one hour drive, or 65 miles from the project area) was used in the indirect effects analysis.

5.14.2 Comparative Analysis of Alternatives

Recreational activities were reduced when the CSI lands were transferred from public lands to private lands in the 1980s. The effects of this land transfer have been addressed previously and, therefore, will not be analyzed for these alternatives.

5.14.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects to recreation resources would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and Section 404 permits.

If future development of individual parcels were to occur, then it may or may not add recreational parks and facilities to the area. If recreational parks and facilities were developed, this could result in direct beneficial effects on recreational resources, by adding recreational opportunities.

INDIRECT EFFECTS

No indirect effects to recreation resources would occur as a result of the No Action Alternative.

If future development were to occur on individual parcels, then the result would be an increased demand on surrounding BLM and USFWS lands. If recreational facilities were not developed on lands within the project area, further adverse indirect effects of increased demand on outlying BLM and USFS lands would be expected. This includes public lands within White Pine, Lincoln, Clark, and Nye counties in Nevada and Washington County in Utah and Mohave County in Arizona. Trails available for OHV use include the Silver State trail accessed from U.S. Highway 93 near Caliente, which is over 240 miles in length, as well as other trails on BLM and USFS lands and private OHV parks in Alamo and North Las Vegas.

It is assumed that conservation and mitigation measures would be developed for the necessary individual incidental take permits associated with the development activities (or individual Biological Opinions and incidental take statements for activities requiring federal permits/approvals) to avoid and minimize adverse effects to nearby recreational lands by OHVs and other means.

5.14.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

As stated in the alternative description for the Preferred Alternative, recreational facilities could include an amusement park and open space such as golf courses, parks, sports fields, open space wash corridors, and trails. These recreational resources would provide for the varied interests of the future residents of the CSI planned community and would result in long-term benefits. Recreational space would occur on 5 to 12 percent of the Development Area and much of the recreational space would be open to the public. Additionally, the CSICL, totaling 13,767 acres, would be open to the public for non-motorized recreational use on designated trails.

INDIRECT EFFECTS

Under the Preferred Alternative, increases in the use of adjacent BLM and USFWS lands, including wilderness areas, for recreational activities could occur. OHV use could increase on trails near the CSI Development. While fencing of the CSICL would prevent access of OHV vehicles from CSI private lands to the BLM lands to the east, indirect, adverse effects to nearby public lands and private OHV parks (those available within a one hour drive, or approximately 65 miles) available for recreation would be expected to occur from the influx of a large, permanent population near these lands. This includes public lands within White Pine, Lincoln, Clark, and Nye counties in Nevada and Washington County in Utah and Mohave County in Arizona. Trails include the Silver State trail accessed from U.S. Highway 93 near Caliente, which is over 240 miles in length, as well as other trails on BLM and USFS lands and private OHV parks in Alamo and North Las Vegas. These indirect effects could include the creation of social trails, illegal dumping, littering, and vandalism, which would have the potential to diminish the recreational value of the nearby areas. Due to the distance on foot required to access nearby ACECs and wilderness areas, the potential effect from the increase in residents would be more limited than in areas accessible by vehicle (see Section 5.7 and 5.8 for further information on effects to ACECs and wilderness areas). However, conservation and mitigation measures could be used to ensure that educational opportunities be implemented within the community to address potential problems associated with increased use, such as creation of social trails, illegal dumping, and vandalism. Although these measures would not remove the potential for these effects, they could help in minimizing them.

5.14.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT AND INDIRECT EFFECTS

Direct and indirect effects would be the same as described for the Preferred Alternative, although recreational pressure on lands within an hour's drive (i.e., 65 miles) would be slightly higher under Alternative 1 from the increased number of residential units constructed.

5.15 PUBLIC SERVICES AND UTILITIES

5.15.1 Evaluation Criteria

Development of public services and utilities cannot result in changes beyond those allowed by federal, state, and local jurisdictions.

5.15.2 Comparative Analysis of Alternatives

5.15.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects to public services would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. There are currently no public services or utilities in the project area. Parcel-by-parcel development that could occur in the future may result in the lack of adequate public services provided in the area. The mechanism by which water, sewer, and power are delivered to the individual landowners' sites could put a strain on existing public services in Lincoln County, although domestic wells and septic tanks could also be installed to provide services.

INDIRECT EFFECTS

No indirect effects would occur to public services as a result of the No Action Alternative.

5.15.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

Because no public services and utilities exist in the area, the Preferred Alternative would result in the development of public services and utilities to supply the needed services to the Development Area. These services would occur in a phased approach, concurrent with phased development of the community. Public buildings, telephone utilities, wastewater treatment, and power (electrical and potentially solar) would be constructed as outlined in the alternative description to result in necessary public services for the proposed town. These buildings and utilities would be constructed in compliance with all regulations and would not burden any existing public service or utility; therefore, no adverse effects would occur.

INDIRECT EFFECTS

No indirect effects would occur to public services as a result of the Preferred Alternative.

5.15.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT EFFECTS

Development of public services and utilities would occur concurrently with construction activities in this alternative. The public services and utilities outlined in the Alternative 1 description would be constructed in compliance with all regulations and would not burden any existing public service or utility; therefore, no adverse effects would occur.

INDIRECT EFFECTS

No indirect effects would occur to public services as a result of Alternative 1.

5.16 SOCIOECONOMICS

5.16.1 Evaluation Criteria

There are no specific quantitative or qualitative evaluation criteria in Lincoln County for socioeconomics. Socioeconomics were analyzed to consider whether the project would:

- Directly or indirectly induce substantial population growth;

- Displace substantial numbers of residential units, requiring the construction of replacement housing elsewhere;
- Displace a substantial number of persons, necessitating the construction of replacement housing;
- Substantially alter demographics of the area;
- Substantially affect employment levels of the area;
- Substantially alter income levels of the area;
- Substantially alter fiscal revenues realized by local governments; or
- Substantially affect local social groups.

It has been assumed that temporary housing would not be provided on-site for workers. In addition, it is expected that most construction workers would be from the Las Vegas metropolitan area, although new residential subdivisions have been approved in Alamo and Caliente in Lincoln County.

5.16.2 Comparative Analysis of Alternatives

Under the No Action Alternative, socioeconomic conditions would remain unaffected since the proposed development would not be permitted. However, if the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners. The project area could become a subdivided development where individual landowners would be responsible for environmental and land use permits. The timing and size of the development in terms of number of residential units and commercial or retail square footage is not known. Under the two action alternatives, the Preferred Alternative and Alternative 1, the project development would differ in construction time frame and final size. Table 5-23 presents the key characteristics of the three alternatives. The components of the two action alternatives, including the timeframe, are based in part upon the Fiscal Analysis (Appendix N). These characteristics largely determine the socioeconomic impact of each alternative. The primary difference between the two action alternatives are that under Alternative 1, the number of residential units would be increased by approximately 20,879 units. The time frame for the incidental take permit under both the Preferred Alternative and Alternative 1 would be 40 years. The following sections analyze the socioeconomic impacts of each of the three alternatives.

Table 5-23 Summary of Financial Parameters Used to Estimate Economic and Fiscal Impact

	No Action Alternative	Preferred Alternative	Alternative 1
Years of Project Construction	Not Available	35	40
Residential Units Built	Not Available	111,000	131,879
Commercial Square Footage Built	Not Available	15,900,000	15,900,000
Holes of Golf Constructed	Not Available	162	162
Source: Meridian Business Advisors, 2007; Personal Communication with Wingfield Nevada Group.			

5.16.2.1 No Action Alternative

DIRECT AND INDIRECT EFFECTS

No direct effects to socioeconomics would occur.

Under the No Action Alternative, the proposed CSI Development would not be constructed in Lincoln County. However, if CSI private lands were sold to individual landowners, the area would be developed as subdivisions with individual landowners obtaining environmental and land use permits. As the size and timing of development is unknown, the effects on population, socioeconomic conditions, and economic activity are also unknown. It would be unlikely, though, that the development would proceed as quickly and on as large a scale as the CSI Development, so it would be not expected that the region would experience as high a rate of growth in terms of population and economic activity as under the action alternatives. Additionally, it is unknown if

development by individual landowners would include retail and commercial businesses, which are the primary drivers of increased economic activity after project construction is complete.

5.16.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

Socioeconomic effects of the Preferred Alternative include impacts on population, adjacent communities and social groups, housing, local economic activity, and tax revenue. Each of these impacts is discussed separately in the sections below.

5.16.2.2.1 Population

DIRECT EFFECTS

The CSI Development in Lincoln County would be expected to result in substantial population growth in the region based on the number of new housing units proposed as part of the project. However, the net impact of the project on the total population of Lincoln County would be difficult to estimate, because the number of people that would relocate within Lincoln County, as opposed to new residents moving to the area from outside Lincoln County, would be unknown. Based on the small existing population in Lincoln County (approximately 3,900 residents in 2005) and countywide population projections without the project (future population of about 5,900 residents by 2026), it would be likely that the Preferred Alternative would primarily attract residents from outside Lincoln County who would not have otherwise moved to Lincoln County. In other words, it would be likely that most new residents of the CSI Development represent population growth that would be directly attributable to the project.

Based on maximum development levels on lands authorized for development under the Preferred Alternative, the CSI Development would provide approximately 111,000 new residential units in Lincoln County. If it is assumed that all new residents of the CSI Development would not have otherwise moved to Lincoln County, the Preferred Alternative would result in 111,000 new households in Lincoln County. Based on the 2000 Census data average of 2.48 people per housing unit in Lincoln County, it would be estimated that the Preferred Alternative would result in an increased regional population of approximately 275,300 people (U.S. Census Bureau 2000). This represents an approximate seventy-fold increase in population relative to existing conditions.

INDIRECT EFFECTS

Because of the limited available private land within Lincoln County and none available within the vicinity of the proposed CSI Development, indirect effects on population would be unlikely.

5.16.2.2.2 Housing

DIRECT EFFECTS

The Preferred Alternative entails the development of approximately 111,000 new housing units in Lincoln County. This represents a substantial increase in the quantity and quality of the local housing stock. From a housing market perspective, this would be considered a beneficial impact of the project, because it would be likely that the Preferred Alternative would offer quality housing at prices lower than market prices in the greater Las Vegas area and would accommodate residents from varying income groups.

INDIRECT EFFECTS

In this manner, the CSI Development may also reduce the inflationary pressure on Las Vegas housing prices. It would be unlikely any effects to housing prices in communities in Lincoln County would occur, as no houses or communities occur near the CSI Development and the rural communities in Lincoln County do not have subdivisions and/or master-designed communities similar to the proposed CSI Development. The nearest community is Moapa, 20 miles southeast of the project area.

5.16.2.2.3 Local Economic Activity

DIRECT AND INDIRECT EFFECTS

The analysis focuses on various phases and components of the project. Specifically, economic impacts are estimated for the construction phase of the project, as well as the operations phase, which includes commercial, retail, and golf course operations. A summary of aggregated economic effects for construction and operations during the 35-year build out period and long-term operations (i.e., Year 36 and beyond) is also presented. The analysis assumes that the residents of the CSI Development would either purchase goods and services from the associated retail and commercial businesses planned as part of the project or from businesses in Clark County. Based on this assumption, additional direct retail and commercial impacts on other Lincoln County businesses due to increased population and income in Lincoln County are not estimated.

Local economic impacts are estimated using IMpact analysis for PLANning (IMPLAN), an input-output (I-O) model consisting of a system of software and data used to perform economic impact analyses.[13] I-O models quantitatively measure the interdependence among economic sectors, based on the concept that all industries within an economy are linked together (i.e., the output of one industry becomes the input for another industry until all final goods and services are produced).

The IMPLAN model is used to estimate specific parameters of economic impacts, namely economic output, employment, and income. For the purposes of this socioeconomics analysis, the focus is on net economic impacts, which are measured as changes in employment and income. In the context of an I-O analysis, impacts are classified as direct, indirect, and induced. Direct impacts represent the initial change in spending or production (known as a change in final demand) attributed to a project or policy action. Indirect impacts capture the "ripple" effect of directly impacted businesses buying inputs from other businesses in order to meet the change in final demand. Induced impacts are attributed to changes in household spending, which are affected by the direct and indirect impacts on household income levels. Total economic impacts are the sum of direct, indirect, and induced impacts. The results presented in this section reflect the direct and total economic effects of the project.

For the purposes of this NEPA document, indirect effects would be considered as the sum of indirect and induced effects from the I-O analysis. Indirect effects can be inferred from this section by comparing direct and total economic effects.

For this analysis, an I-O model based on 2002 data was constructed for Lincoln County, so the results presented in this section pertain to Lincoln County only. It should be noted that the Lincoln County portion of the CSI Development would also generate some level of economic impacts in neighboring counties, primarily Clark County; however, these effects were not quantified. Inputs to the economic model were derived from the Coyote Springs, Lincoln County: Fiscal Impact Analysis (2007) prepared by Meridian Business Advisors. The fiscal analysis provides data in five-year intervals, and the results of the economic analysis in this section are presented accordingly. Unless otherwise noted, all values are given in 2006 dollars and in average annual terms (based on five-year intervals).

CONSTRUCTION EFFECTS ON LOCAL ECONOMIC ACTIVITY

According to the fiscal analysis prepared for this project, total construction costs of the Preferred Alternative would amount to approximately $65.2 billion over the 35-year build out period. Residential construction accounts for $53.4 billion of construction costs (82 percent), while commercial construction accounts for $11.7 billion (18 percent). Based on personal communication with the developer, IMPLAN data, and the size of the local economy, it is estimated that local businesses in Lincoln County would provide approximately three percent of the residential construction services and five percent of commercial construction services needed to serve the project. Therefore, it is estimated that $609.9 million would be spent in the Lincoln County

[13] Originally developed by the USDA Forest Service, the system is now maintained and marketed by the Minnesota IMPLAN Group, Inc. (MIG). The data are developed by MIG annually, using data collected at the national, state, and county levels from a variety of state and federal sources.

construction industry[14] over 35 years. Table 5-24 presents average annual increased demand for local construction services for each five-year interval of the project; these vary from $5.1 million annually in the initial stages of the project to a peak of $29.5 million annually later in the project. The construction expenditures represent the change in final demand for construction services, and correspond to the "direct" economic impacts of project construction, which are measured in terms of construction output, construction jobs, and construction labor income (see Table 5-24).

Table 5-24 Estimated Average Annual Construction Expenditures in Lincoln County (5-Year Project Intervals)

Project Interval (Years)	Expenditures
1-5	$5,070,000
6-10	$12,994,000
11-15	$21,775,000
16-20	$29,535,000
21-25	$25,667,000
26-30	$19,298,000
31-35	$7,634,000

Source: Meridian Business Advisors, 2007 (Coyote Springs Fiscal Impact Analysis, Lincoln County); ENTRIX 2006.

The expenditures provided in Table 5-25 are direct expenditures in the construction industry. As the construction industry purchases local materials and as construction workers spend their wages locally, additional economic activity would be generated in the Lincoln County economy. The total annual economic output by businesses in Lincoln County attributing to the project's construction phase are estimated to average between approximately $6.1 million to $35.9 million annually, depending on the phase of the project (see Table 5-25). This level of construction-related output, in turn, would be expected to support an estimated 30 to 4,600 jobs annually, and generate $2.5 million to $466.8 million in labor income annually over the next 35 years.

Table 5-25 Average Annual Commercial and Residential Construction Impacts in Lincoln County (5-Year Project Intervals)

Type of Impact	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Years 26-30	Years 31-35
Output (in millions)							
Direct	$5.1	$13.0	$21.8	$29.5	$25.7	$19.3	$7.6
Total	$6.1	$15.8	$26.5	$35.9	$31.2	$23.5	$9.2
Employment (jobs)[1]							
Direct	20	1,980	2,780	3,960	3,720	3,560	30
Total	30	2,300	3,230	4,610	4,330	4,140	40
Labor Income (in millions)							
Direct	$2.2	$209.0	$293.3	$417.8	$392.6	$375.7	$3.3
Total	$2.5	$233.5	$327.7	$466.8	$438.6	$419.7	$3.8

Source: ENTRIX 2007 (based on IMPLAN modeling).
[1]Expressed in number of full- and part-time jobs.

[14] Lincoln County currently has a small construction industry. According to IMPLAN data, total annual value of single-family home construction is valued at $1.5 million and commercial construction is valued at $0.8 million. It was assumed in this analysis that the construction industry would double in the first years of development due to the increased demand, which would enable local businesses to provide approximately one percent of residential construction and one-half percent of commercial production each year of the project. It is assumed that the proportion of construction costs spent locally remains constant throughout the life of the project.

COMMERCIAL AND RETAIL OPERATIONS EFFECT ON LOCAL ECONOMIC ACTIVITY

It is projected that, upon project completion, there would be about 12 million square-feet of commercial business operations and four million square-feet of retail business operations in the Lincoln County portion of the CSI Development. Based on a 35-year construction period, the expected commercial/retail square-footage developed and the associated employment are presented in Table 5-26.

Table 5-26 Estimated Average Cumulative Commercial Square-Footage and Employment in Lincoln County (5-Year Project Intervals)

Project Interval (Years)	Commercial		Retail	
	Square Footage	Employment	Square Footage	Employment
1-5	0	0	0	0
6-10	1,215,000	1,470	405,000	290
11-15	3,487,500	5,450	1,162,500	1,070
16-20	6,262,500	10,300	2,087,500	2,030
21-25	8,925,000	15,340	2,975,000	3,020
26-30	11,115,000	19,470	3,705,000	3,830
31-35	11,925,000	21,680	3,975,000	4,270

Source: Meridian Business Advisors, 2007 (Coyote Springs Fiscal Impact Analysis, Lincoln County).

The commercial space, discussed in the preceding paragraph and presented in Table 5-26, would be expected to be filled primarily by service-sector businesses (restaurants, health care, legal services, car repair, etc.) as well as businesses in the transportation, utilities, and warehousing sectors. The retail space would be filled by such retail businesses as grocery stores, drug stores, and gas stations. These commercial and retail businesses would directly increase economic activity in Lincoln County by $179 million annually in the early years of the project and would expand to $2.6 billion when the project nears completion. The businesses would also indirectly increase economic activity in related sectors. Based on the inter-industry relationships of the retail and commercial sectors in Lincoln County, it would be estimated that the retail and commercial businesses in the proposed CSI Development would result in $38.2 million in total increased economic output annually, on average, in Lincoln County during the initial stages of the project, and would ultimately result in nearly $3.1 billion in average annual County output by the end of project build out.

The net economic benefits to Lincoln County include an additional 3,800 jobs and $93 million in labor income in the initial stages of the project, increasing to approximately 31,600 jobs and $1.4 billion in labor income as the project nears completion (see Table 5-27). These figures are likely conservative estimates of total economic impact, as increased economic activity in Lincoln County would result in stronger interindustry linkages within the County as more inputs are available locally (e.g., a business needing legal services may be able to find a law firm in Lincoln County versus going to Clark County).

Table 5-27 Average Annual Commercial and Retail Impacts in Lincoln County (5-Year Project Intervals)

Type of Impact	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Years 26-30	Years 31-35
Output (in millions)							
Direct	$0	$179	$661	$1,249	$1,860	$2,361	$2,629
Total	$0	$213	$790	$1,492	$2,222	$2,821	$3,141
Employment (jobs)							
Direct	0	1,760	6,530	12,320	18,360	23,310	25,950
Total	0	3,760	7,960	15,020	22,380	28,410	31,640
Labor Income (in millions)							
Direct	$0	$82	$303	$571	$851	$1,080	$1,203
Total	$0	$93	$345	$652	$971	$1,233	$1,373

Source: ENTRIX, 2007 (based on IMPLAN modeling).

Note: Impacts from commercial and retail businesses were calculated separately. Commercial impacts were based upon IMPLAN data for Clark and Lincoln counties for the following sectors: services, transportation, warehousing, utilities, and maintenance. Retail impacts were calculated based upon IMPLAN data for Clark and Lincoln counties for retail sectors. Multipliers to determine total impacts were based on Lincoln County IMPLAN data, while relationships regarding output per employee and income per employee were based on Clark County IMPLAN data.

RECREATIONAL ACTIVITY (GOLF COURSE) EFFECTS ON LOCAL ECONOMIC ACTIVITY

In addition to residential homes and commercial space, the proposed CSI Development would also include up to nine 18-hole golf courses, which would generate economic benefits from construction and operations. To estimate the economic impacts of construction, this analysis assumes that one golf course would be built every four years. Golf course construction costs for upscale golf courses can vary from approximately $4 million to $16 million;[15] this study assumes construction costs of $8.6 million per golf course.[16] Based on IMPLAN data, it is estimated that approximately five percent of total golf course construction expenditures would be spent within the Lincoln County construction industry.[17] This directly results in an average annual increase of approximately $90,000 in construction-related economic output, and an average annual increase of $116,000 in total economic output during project construction. In terms of other economic benefits, golf course construction is anticipated to generate, on average, approximately one job and $50,000 in increased labor income annually in Lincoln County in each of the 35 years of project development.

The operation of CSI Development golf courses would also increase economic activity in Lincoln County. The CSI developer estimated that there would be 22,300 rounds of golf played on each course the first year of opening, increasing to 30,000 rounds in the third year of opening (Personal Communication with Coyote Springs, September 2006). Based on an average green fee of approximately $100 per round in the Las Vegas area, each fully operating golf course would generate revenues of approximately $3 million annually. Assuming the first golf course opens in the second year of the project followed by a new one opening every four years, Table 5-28 presents the economic impact of the completed golf courses. Golf course revenues are expected to rise from an annual average of $2.2 million in the first years of the project to nearly $25 million once the project nears completion. The total economic impact of golf course operations at the CSI Development would be expected to increase, on average, from approximately 50 jobs annually and $1.4 million in annual labor income during the first several years of the project, to about 600 jobs annually and $15.7 million in annual labor income in its final phase. After project completion (year 36 and beyond), the golf courses are expected to employ approximately 650 employees and generate $17.1 million in annual labor income.

[15] Creed, Richard, 2006, "What is the Cost to Develop Upscale Golf," Golf Ventures Incorporated Consulting.

[16] This estimate is based on a developer's estimated costs to develop a golf course in Southern California.

[17] For IMPLAN sector 41, "Other Construction," the regional purchasing coefficient (percent of local "other construction" demand that is supplied by local businesses) is 4.7 percent.

Table 5-28 Average Annual Golf Course Operation Impacts in Lincoln County (5-Year Project Intervals)

Type of Impact	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Years 26-30	Years 31-35
Output (in millions)							
Direct	$2.2	$6.2	$9.9	$13.6	$17.2	$21.2	$24.9
Total	$2.8	$7.9	$12.5	$17.2	$21.8	$26.9	$31.6
Employment (full- and part-time jobs)							
Direct	50	135	220	300	380	465	545
Total	50	150	255	330	415	510	600
Labor Income (in millions)							
Direct	$1.3	$3.6	$5.7	$7.9	$9.9	$12.3	$14.4
Total	$1.4	$3.9	$6.7	$8.6	$10.9	$13.4	$15.7

Source: ENTRIX, 2007 (based on IMPLAN modeling).
Note: Based upon IMPLAN sector 476, Fitness and Recreational Sports Centers.

SUMMARY OF LOCAL ECONOMIC EFFECTS

The anticipated increase in countywide employment and income resulting from the Preferred Alternative were analyzed for both construction and operation phases of the CSI Development, which overlap during the 35-year construction period. The combined economic effects of project construction and operations during project development are presented in Table 5-29. The economic benefits of the project are projected to increase from 80 jobs and $4.0 million in labor income on average per year during the first five years of project development, to an average of over 32,300 jobs and $1.4 billion in labor income annually during the last five years of project development. After project development is completed, average annual economic benefits to Lincoln County are estimated to continue at approximately 32,300 jobs and $1.4 billion in labor income (see Table 5-30).

Table 5-29 Average Annual Construction and Operation Impacts in Lincoln County (5-Year Project Intervals)

Type of Impact	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Years 26-30	Years 31-35
Output (in millions)							
Direct	$7.4	$197.9	$693.2	$1,291.7	$1,903.3	$2,402.0	$2,661.9
Total	$9.1	$237.1	$829.3	$1,544.7	$2,275.6	$2,871.5	$3,181.9
Employment (full- and part-time jobs)							
Direct	70	3,880	9,520	16,580	22,460	27,330	26,530
Total	80	6,210	11,450	19,960	27,130	33,060	32,280
Labor Income (in millions)							
Direct	$3.6	$294.4	$601.7	$996.9	$1,253.7	$1,468.4	$1,220.6
Total	$4.0	$330.7	$679.7	$1,127.1	$1,420.7	$1,665.9	$1,392.1

Source: ENTRIX, 2007 (based on IMPLAN modeling).

Table 5-30 Average Annual Operation Impacts in Lincoln County (After Project Construction)

Type of Impact	Retail Operations	Golf Course	Total
Output (in millions)			
Direct	$2,629.3	$27.0	$2,656.3
Total	$3,141.0	$34.2	$3,175.3
Employment (jobs)			
Direct	25,950	590	26,540
Total	31,640	650	32,290
Labor Income (in millions)			
Direct	$1,202.8	$15.6	$1,218.5
Total	$1,372.6	$17.1	$1,389.6

Source: ENTRIX, 2007 (based on IMPLAN modeling).

These estimates should be interpreted as approximate figures, since the CSI Development is still in the planning stages, and economic impacts would depend on the specific types of housing and commercial development, the visitation at golf courses, and the degree to which local businesses contribute to the development. If the assumptions made above regarding these characteristics were to change, the estimated local economic impacts would also change. Additionally, as noted in the preceding paragraphs, the estimates of total economic impacts of commercial and retail operations are likely conservative, since a development of this magnitude would tend to increase business to business interactions in Lincoln County, thereby increasing the indirect and induced effects of economic activity.

5.16.2.2.4 Fiscal Resources

DIRECT EFFECTS

The analysis of fiscal impacts is based on a separate technical study prepared for the proposed CSI Development, *Coyote Springs Lincoln County Fiscal Impact Analysis* (2007)[18]; this study is included as Appendix N to this EIS. The analysis evaluated both property and sales tax effects of the project over a 35-year build out period and beyond. Overall, as described in more detail below, the proposed CSI Development could generate substantial fiscal benefits for local governments.

The property tax analysis estimated potential property tax revenues generated by the project and compared these costs to anticipated governmental expenditures that would be needed to serve the proposed CSI Development. These public revenue and expenditures were estimated for three funds: 1) General Fund (includes operating costs for law enforcement, juvenile probation, adult detention, judicial, and general government, as well as costs of construction and leasing of offices for additional public sector employees); 2) Library Fund (includes operating costs for the library department); and 3) Capital Projects Fund (includes the costs of construction of a library, a police sub-station, and a jail). The findings of the fiscal analysis are summarized in Table 5-31. All funds are estimated to realize a budget surplus during project construction and in the long-term (Year 36 and beyond). After project completion, estimated annual surpluses are $59 million for the General Fund, $16 million for the Library Fund, and $17 million for the Capital Projects Fund. Additionally, annual sales tax revenues to Lincoln County after project completion are estimated at $34 million.

[18] Meridian Business Advisors, 2007. The estimates in this table include annual inflation rates of 3 percent starting in 2006.

Table 5-31 Estimated Fiscal Impacts in Lincoln County (Million $)

Type of Impact	Cumulative During Project Construction	Average Annual After Project Completion (Year 36+)
General Fund		
Cumulative Project Revenue	$6,977	$485
Cumulative Project Costs	$5,873	$426
Annual Revenue Surplus	$1,104	$59
Library Fund		
Cumulative Project Revenue	$253	$20
Cumulative Project Costs	$98	$4
Annual Revenue Surplus	$155	$16
Capital Projects Fund		
Cumulative Project Revenue	$298	$23
Cumulative Project Costs	$165	$6
Annual Revenue Surplus	$133	$17
Sales Tax	$899	$34

Source: Meridian Business Advisors 2007.

Note: These estimates are based on hypothetical 35-year build out of the proposed CSI Development and Year 36, which represents long-term annual fiscal impacts.

INDIRECT EFFECTS

Indirect effects to local government income from the Preferred Alternative would not occur.

5.16.2.2.5 Communities and Social Groups

DIRECT EFFECTS

Due to the distance of communities from the proposed CSI Development (20 miles or greater), no direct effects to communities and social groups would be expected from implementing the Preferred Alternative.

INDIRECT EFFECTS

The communities and social groups identified in the Affected Environment section could be indirectly affected, both beneficially and adversely, by the proposed CSI Development. Beneficial impacts are tied primarily to the increased housing availability in Lincoln County and the amenities and retail services provided by the proposed development. Conversely, nearby communities may experience adverse effects from the externalities generated by urban development, such as impacts on air pollution, congestion, open space, and land values. The major social effects of the project are summarized below for each potentially affected social group. It is important to note that these are potential and representative impacts and that some of these groups may not be affected depending on the specifics of how the proposed CSI Development would be designed and implemented.

- **Future community residents**. The innovative planning and design features of the proposed development, including an unusually high number of community amenities, would lead to many beneficial social impacts for new community residents. Such amenities would include employment and educational opportunities associated with retail centers and public institutions; a wide range of housing types, thus allowing a diverse range of resident incomes and lifestyles; and recreation amenities, including several golf courses and recreational trails. The extent to which these benefits would accrue to other social groups, including low-income populations, would depend on how affordable the proposed housing would be to prospective homebuyers.
- **Native Americans**. The Moapa Band of Paiute Indians and other Native American interests could potentially be adversely affected by the proposed CSI Development if their cultural resources are disturbed,

or if an increase in recreation access or use increases the risk of vandalism to these resources. In addition, some locations near the Moapa River Indian Reservation may be used for traditional cultural practices, and could be vulnerable to disturbance from an increase in regional population. However, government-to-government consultation with tribes and consultation with the Nevada SHPO would ensure that no adverse effects would occur to Native American tribes as a result of constructing the proposed CSI Development.

- **Low-income populations**. This social group may benefit from the proposed community if affordable housing is provided as planned.
- **Property owners and other residents of nearby communities**. No residents live on land near the proposed CSI Development, although there are some small parcels of private land. Other Lincoln County residents that reside in the closest communities could experience a range of diverse impacts. These may include changes in their relatively quiet and rural lifestyles as local population increases during the build out of the development. While travel times may initially increase, the transportation improvements that are part of the proposed development could benefit local residents as they are implemented, and travel times may be reduced as road service levels are improved.
- **Owners of affected businesses and their employees.** Local businesses may benefit from the project if construction workers and community residents purchase their products locally, such as gasoline, food, clothing, and a variety of construction and landscaping materials. Some business owners could experience temporary and adverse impacts if their customers' access would be impeded during construction activities. Long-term adverse impacts of the project may be experienced if commercial development within the CSI Development draws away their customers. Nearby business operations based on farming or ranching could also experience adverse impacts if their businesses are altered or restricted due to urban development in the region. However, effects to businesses based on farming or ranching would be unlikely, because there are limited private lands located near the proposed CSI Development.
- **Recreationists.** An overall increase in recreation access and opportunities would benefit many recreationists, especially those that participate in more urban recreation activities such as golfing. Recreationists who put a premium on more remote and primitive recreation experiences may, however, be adversely affected by the development and the subsequent overall increase in visitation and population in the region.

5.16.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

Under Alternative 1, 131,879 residential units would be constructed, which would be 20,879 more residential units than under the Preferred Alternative. Additionally, the project construction would occur over 40 years, in contrast to the 35 years under the Preferred Alternative. There are no differences in the extent of proposed commercial and recreational land uses between the two action alternatives. Alternative 1 would be expected to generate the same general types of socioeconomic impacts as described under the Preferred Alternative, but would result in larger total impacts during the construction phase due to the higher number of residential units. In general, however, the annual economic impacts of construction would not increase as the construction would be spread out during a longer project development period of 40 years.

Although retail and commercial development would be the same under the two action alternatives, the additional residential units in Alternative 1 would likely lead to increased retail and commercial activity. However, it is not possible to quantify these effects as the commercial and retail development size would be based on the quantity of residential housing developed under the Preferred Alternative, and it is not known to what extent the development's retail and commercial sectors would be able to service increased demand from additional residential units.

This section describes the socioeconomic impact of Alternative 1, focusing on the aspects that differ from the Preferred Alternative.

5.16.2.3.1 Population

DIRECT EFFECTS

As in the Preferred Alternative, Alternative 1 would be expected to result in substantial population growth in the region due to the number of new housing units proposed as part of the project. Based on maximum development levels on lands authorized for development under Alternative 1, the proposed CSI Development would provide approximately 131,879 new residential units in Lincoln County. If it is assumed that all new residents of the CSI Development would not have otherwise moved to Lincoln County, then Alternative 1 would result in 131,879 new households in Lincoln County. Based on 2000 Census data average of 2.48 people per housing unit in Lincoln County, it is estimated that Alternative 1 would result in an increased regional population of approximately 327,100 people. This represents an approximate eighty-fold increase in population relative to existing conditions (compared to a seventy-fold increase in the case of Preferred Alternative).

INDIRECT EFFECTS

Because of limited available private lands in Lincoln County, additional development would be limited. Indirect effects of increases in population from a larger economic base from the proposed CSI development would not occur.

5.16.2.3.2 Housing

DIRECT EFFECTS

Alternative 1 entails the development of 131,879 new housing units in Lincoln County. This represents a substantial increase in the quantity and quality of the local housing stock. From a housing market perspective, this would be considered a beneficial impact of the project, because it would be likely that Alternative 1 would offer quality housing at prices lower than market prices in the greater Las Vegas area and would accommodate residents from varying income groups.

INDIRECT EFFECTS

As noted in the Preferred Alternative, the CSI Development may help set the trend for more affordable housing throughout Lincoln County, and may also reduce inflationary pressure on Las Vegas housing prices. Since more residential units are planned in Alternative 1, relative to the Preferred Alternative, the beneficial effect on the housing market should be greater from this alternative than from the Preferred Alternative.

5.16.2.3.3 Local Economic Activity

DIRECT AND INDIRECT EFFECTS

CONSTRUCTION EFFECTS ON LOCAL ECONOMIC ACTIVITY

According to fiscal analysis prepared for this project, total construction costs of Alternative 1 would total approximately $81.1 billion over the 40-year build out period. Residential construction accounts for $69.4 billion of construction costs (86 percent), while commercial construction accounts for $11.7 billion (14 percent). Similar to the analysis for the Preferred Alternative, it would be estimated that local businesses in Lincoln County would provide approximately one percent of the residential construction services and 0.5 percent of commercial construction services needed to serve the project.[19] Therefore, it is estimated that

[19] Lincoln County currently has a small construction industry. According to IMPLAN data, total annual value of single-family home construction is valued at $1.5 million and commercial construction is valued at $0.8 million. It was assumed in this analysis that the construction industry would double in the first years of development due to the increased demand, which would enable local businesses to provide approximately 1 percent of residential construction and 0.5 percent of commercial production each year of the project. It is assumed that the proportion of construction costs spent locally would remain constant throughout the life of the project.

$772 million would be spent in the Lincoln County construction industry over 40 years. Table 5-32 presents average annual increased demand for local construction services for each five-year interval of the project; these vary from $3.8 million annually in the initial stages of the project to a peak of $33.6 million annually later in the project. The construction expenditures represent the change in final demand for construction services and correspond to the "direct" economic impacts of project construction, which are measured in terms of construction output, construction jobs, and construction labor income (see Table 5-21).

Table 5-32 Estimated Average Annual Construction Expenditures in Lincoln County (5-Year Project Intervals)

Project Interval (Years)	Expenditures
1-5	$3,817,000
6-10	$11,541,000
11-15	$20,090,000
16-20	$31,236,000
21-25	$33,592,000
26-30	$28,486,000
31-35	$18,123,000
36-40	$7,555,000

Source: Meridian Business Advisors, 2007 (Coyote Springs Fiscal Impact Analysis, Lincoln County); ENTRIX, 2006.

The expenditures presented in Table 5-32 are direct expenditures in the construction industry. As the construction industry purchases local materials and as construction workers spend their wages locally, additional economic activity would be generated in the Lincoln County economy. The total annual economic output by businesses in Lincoln County attributed to the construction phase of Alternative 1 would be estimated to average between approximately $4.6 million and $40.8 million annually, depending on the phase of the project (see Table 5-33). This level of construction-related output, in turn, would be expected to support an estimated 20 to 4,600 jobs annually and generate $1.9 million to $467.6 million in labor income annually over the next 40 years.

Table 5-33 Average Annual Commercial and Residential Construction Impacts in Lincoln County: Alternative 1 (5-Year Project Intervals)

Type of Impact	Years 1-5	Years 6-10	Years 11-15	Years 16-20[1]	Years 21-25	Years 26-30	Years 31-35
Output (in millions)							
Direct	$3.8	$11.5	$20.1	$31.2	$33.6	$28.5	$18.1
Total	$4.6	$14.0	$24.4	$37.9	$40.8	$34.6	$21.9
Employment (full- and part-time jobs)							
Direct	20	1,970	2,770	3,960	3,750	3,590	70
Total	20	2,300	3,230	4,620	4,370	4,190	100
Labor Income (in millions)							
Direct	$1.7	$208.4	$292.6	$418.5	$396.1	$379.7	$7.9
Total	$1.9	$232.8	$326.8	$467.6	$442.5	$424.3	$9.0

Source: ENTRIX, 2007 (based on IMPLAN modeling).

[1]While output is lower in the 16-20 year interval than in the 21-25 year interval, the number of jobs and the amount of income generated is larger. This is due to the fact that commercial construction spending is higher relative to residential construction in the 16-20 year interval, and there are more jobs and income generated by commercial construction spending.

COMMERCIAL AND RETAIL OPERATIONS EFFECTS ON LOCAL ECONOMIC ACTIVITY

The proposed commercial and retail development under Alternative 1 would be identical to the development under the Preferred Alternative. Therefore, the effects on local economic activity are expected to be the same as described in Section 5.15.2.2.3 and Tables 5-11 and 5-12. These include net economic benefits to Lincoln

County of an additional 3,800 jobs and $93 million in labor income in the initial stages of the project, and approximately 31,600 jobs and $1.4 billion in labor income as the project nears completion (see Table 5-33). These figures are likely conservative estimates of total economic impact, as increased economic activity in Lincoln County would result in stronger inter-industry linkages within the County as more inputs are available locally (e.g., a business needing legal services may be able to find a law firm in Lincoln County versus going to Clark County). Additionally, as noted above in the description of impacts related to population growth, the impacts of retail and commercial development would likely be greater in Alternative 1 due to spending by the 21,000 additional households projected for this Alternative.

RECREATIONAL ACTIVITY (GOLF COURSE) EFFECTS ON LOCAL ECONOMIC ACTIVITY

The golf course development under Alternative 1 is also identical to the development under the Preferred Alternative, with the same assumptions applicable. Therefore, the effects on local economic activity are expected to be the same as described in Section 5.15.2.2 and Table 5-30. Golf course construction would be anticipated to generate, on average, approximately one job and $50,000 in increased labor income annually in Lincoln County in each of the 35 years of construction. Following the construction of all golf courses (year 36 and beyond), the courses are expected to employ approximately 650 employees and generate $17.1 million in labor income annually.

SUMMARY OF LOCAL ECONOMIC EFFECTS

The anticipated increase in countywide employment and income resulting from Alternative 1 were analyzed for both construction and operation phases of the CSI Development, which overlap during the 40-year construction period. The combined economic effects of project construction and operations during project development are presented in Table 5-34. The economic benefits of the project are projected to increase from 70 jobs and $3.4 million in labor income on average per year during the first five years of project development, to a peak of 33,100 jobs and $1.7 billion in labor income annually during project development years 26 to 30. After project development would be completed, the average annual economic benefits to Lincoln County are estimated to continue at approximately 32,300 jobs and $1.4 billion in labor income (see Table 5-22).

These estimates should be interpreted as approximate figures since the CSI Development is still in the planning stages, and economic impacts would depend on the specific types of housing and commercial development, the visitation at golf courses, and the degree to which local businesses contribute to the development. If the assumptions made above regarding these characteristics were to change, the estimated local economic impacts would also change. Furthermore, the additional residential units in Alternative 1 would also tend to increase the economic impact of the retail and commercial development due to increased household spending in the area.

Table 5-34 Average Annual Construction and Operation Impacts in Lincoln County (5-Year Project Intervals)

Type of Impact	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 21-25	Years 26-30	Years 31-35	Years 36-40
Output (in millions)								
Direct	$6.1	$196.4	$691.5	$1,293.4	$1,911.3	$2,411.2	$2,672.4	$2,637.0
Total	$7.5	$235.4	$827.3	$1,546.7	$2,285.2	$2,882.6	$3,194.6	$3,150.3
Employment (full- and part-time jobs)								
Direct	60	3,870	9,520	16,580	22,490	27,370	26,570	25,980
Total	70	6,210	11,440	19,970	27,170	33,110	32,330	31,680
Labor Income (in millions)								
Direct	$3.0	$293.8	$600.9	$997.6	$1,257.2	$1,472.4	$1,225.2	$1,206.2
Total	$3.4	$330.0	$678.9	$1,128.0	$1,424.6	$1,670.4	$1,397.4	$1,376.4

Source: ENTRIX, 2007 (based on IMPLAN modeling).

Table 5-35 Average Annual Operation Impacts in Lincoln County After Project Construction

Type of Impact	Retail Operations	Golf Course	Total
Output (in millions)			
Direct	$2,629.3	$27.0	$2,656.3
Total	$3,141.0	$34.2	$3,175.3
Employment (jobs)			
Direct	25,950	590	26,540
Total	31,640	650	32,290
Labor Income (in millions)			
Direct	$1,202.8	$15.6	$1,218.5
Total	$1,372.6	$17.1	$1,389.6

Source: ENTRIX, 2006 (based on IMPLAN modeling).

5.16.2.3.4 Fiscal Resources

DIRECT EFFECTS

The analysis of fiscal impacts is based on a separate technical study prepared for the proposed CSI Development, *Coyote Springs Lincoln County Fiscal Impact Analysis: Full Build out* (2007) (Meridian Business Advisors 2007); this study is included as Appendix N to this EIS. The fiscal analysis evaluated both property and sales tax effects of the project over a 40-year build out period and beyond. Overall, the proposed CSI Development could generate substantial fiscal benefits for local governments, as described below.

The property tax analysis estimated potential property tax revenues generated by the project, and compared these costs to the anticipated governmental expenditures that would be needed to serve the proposed CSI Development. Similar to the analysis for the Preferred Alternative, these public revenue and expenditures were estimated for three funds: 1) General Fund (includes operating costs for Law Enforcement, Juvenile Probation, Adult Detention, Judicial, and General Government, as well as costs of construction and leasing of offices for additional public sector employees); 2) Library Fund (includes operating costs for the Library Department); and 3) Capital Projects Fund (includes the costs of construction of a library, a police substation, and a jail). The findings of the fiscal analysis are summarized in Table 5-36. All funds are estimated to realize a budget surplus during project construction and in the long-term (Year 40 and beyond). After project completion, estimated annual surpluses are $27 million for the General Fund, $22 million for the Library Fund, and $23 million for the Capital Projects Fund. Additionally, annual sales tax revenues to Lincoln County following project completion are estimated at $40 million. It should be noted that Meridian included a three percent inflation rate for each year of their calculation. This signifies that, for example, the $40 million in sales tax revenue after project completion (Year 41) represents expected revenue in 2047 dollars.

Table 5-36 Estimated Fiscal Impacts in Lincoln County (in Millions)

Type of Impact	Cumulative During Project Construction	Average Annual After Project Completion (Year 41+)
General Fund		
Cumulative Project Revenue	$10,351	$675
Cumulative Project Costs	$9,482	$647
Annual Revenue Surplus	$870	$27
Library Fund		
Cumulative Project Revenue	$386	$28
Cumulative Project Costs	$138	$5
Annual Revenue Surplus	$248	$22
Capital Projects Fund		
Cumulative Project Revenue	$454	$33
Cumulative Project Costs	$248	$9
Annual Revenue Surplus	$207	$23
Sales Tax	$1,190	$40

Source: Meridian Business Advisors, 2007.

Note: These estimates are based on hypothetical 40-year build out of the proposed CSI Development and Year 41, which represents long-term annual fiscal impacts. Figures in the table include inflation rates of three percent annually.

INDIRECT EFFECTS

Indirect effects to local government income from the implementation of Alternative 1 would not occur.

5.16.2.3.5 Communities and Social Groups

DIRECT AND INDIRECT EFFECTS

The types of effects on communities and social groups from the implementation of Alternative 1 are expected to be very similar to the types of effects described previously for the Preferred Alternative. However, the increased residential development in Alternative 1 would likely magnify effects, both positively and negatively (see Section 5.15.2.2.3 for details).

5.17 ENVIRONMENTAL JUSTICE

This section evaluates potential environmental justice impacts in the context of the proposed CSI Development. The analysis is based on baseline information such as the racial composition and distribution of income levels across the region's population, as described in Section 4.15.

5.17.1 Evaluation Criteria

Executive Order 12898 requires each agency to achieve environmental justice as part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects, including social or economic effects, of programs, policies, and activities on minority populations and low-income populations. The EPA's Office of Environmental Justice offers the following definition of environmental justice:

> *"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies" (EPA 1997).*

5.17.2 Comparative Analysis of Alternatives

5.17.2.1 No Action Alternative

DIRECT AND INDIRECT EFFECTS

No direct effects to environmental justice would occur.

If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and Section 404 permits. If development were to occur by individual landowners, then the size and type of development under the No Action Alternative would determine the impacts on the environment, human health, cultural resources, as well as on minority or low-income populations in Lincoln County. Environmental justice effects would largely depend upon the effect of the development on environmental quality, the affordability of housing, the creation of jobs, and the provision of public services. As these factors are not known, it is not possible to predict whether potential adverse impacts would disproportionately affect low income or minority communities.

5.17.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT AND INDIRECT EFFECTS

The proposed CSI Development would include large-scale, new residential, commercial, and recreational land uses in a previously rural part of southern Nevada. As described in Section 5.15, Socioeconomics, the Preferred Alternative would generate a range of economic and fiscal benefits, including substantial increases in economic activity, jobs, and income, as well as the establishment of new public services for all community and regional residents. These beneficial effects of the project have the potential to favorably affect low-income and minority communities located in the project area through increased housing (including affordable housing), employment, and other economic opportunities that are not currently present in Lincoln County. New public services could also improve social conditions, including improved health care, for residents of Lincoln County. While there are potential benefits to disadvantaged groups associated with the project, such as an increase in the availability of affordable housing, the project also has the potential to negatively affect low-income communities in Lincoln County if housing costs in the County rise due to the CSI Development. However, this would be unlikely given the distance of the proposed CSI Development from other communities in Lincoln County. Additionally, the Moapa Band of Paiute Indians and potentially other tribes could be adversely affected by the proposed CSI Development if their cultural resources are disturbed. However, tribes with the potential for cultural resources and/or traditional cultural properties potentially affected by the Proposed CSI Development are participating in precautionary measures through government-to-government consultation and consultation with the Nevada SHPO. These would minimize any potential adverse effects.

From an environmental perspective, the Preferred Alternative is expected to result in a range of physical impacts in the project area, including increased traffic congestion, noise, and air emissions. However, project design features and project mitigation would minimize these impacts to the maximum extent practical. Furthermore, none of these adverse impacts are anticipated to fall disproportionately on low-income and minority groups.

5.17.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT AND INDIRECT EFFECTS

Under Alternative 1, additional residential units would be constructed over a longer construction time frame. The alternative is expected to generate the same general types of environmental justice impacts as those described for the Preferred Alternative (see Section 5.16.2.2.1). Compared to the Preferred Alternative, however, Alternative 1 would increase the environmental justice considerations related to implementation of the proposed CSI Development. Since there would be an additional 20,879 housing units in the development under Alternative 1, any effects on the housing market, transportation, air quality, or integrity of cultural resources would likely be magnified.

5.18 HAZARDOUS MATERIALS

5.18.1 Evaluation Criteria

The EPA is responsible for administration of the CWA and the Resource Conservation and Recovery Act (RCRA). The CWA established the NPDES permit program. This program is designed to control the point source discharge of pollutants into the surface WOUS through the enforcement of NPDES permits issued to municipalities and commercial and industrial facilities. NPDES permits contain discharge limitations to surface waters based on effluent or water quality standards, monitoring requirements, and schedules of compliance to achieve compliance with the permit conditions.

RCRA established the program to define and control the treatment, storage and disposal of hazardous waste generated by residential, commercial, and industrial sources. The program identifies waste that exhibits specific characteristics (i.e., ignitability, reactivity, corrosivity, and toxicity), listed waste from non-specific and specific sources, and a specific list of discarded commercial chemical products as hazardous waste that require regulation under RCRA. Hazardous wastes are controlled under the “cradle to grave” concept under RCRA. The program establishes specific facility design and management requirements for generators, transporters and facilities that treat, store and dispose of hazardous waste.

The EPA has delegated to the NDEP the authority to administer the NPDES and RCRA programs in Nevada. Regulatory requirements or permits that regulate the use of hazardous materials, hazardous waste, and regulated substances include:

- NDEP General Permit (NVR 100000), which regulates stormwater runoff from construction sites, is required for the project. A Master SWPPP has been prepared by CSI for the Development Area consistent with the conditions of this general permit. In addition to requiring the implementation of BMPs designed to control erosion and the release of sediment for the project area, the plan also requires that other controls for hazardous material storage and spill prevention and response be developed and implemented. The hazardous material storage and spill prevention facilities are focused on source areas or activities that contain petroleum products, domestic waste, coolants, fertilizer and pesticides. Implementation of the Master SWPPP, consistent with the General Permit conditions, is designed to control the release of hazardous materials utilized and hazardous waste generated during construction into surface waters and control soil contamination.
- Hazardous waste is regulated under 40 CFR 261-272. Hazardous waste generators are regulated under 40 CFR 262, which requires generators of hazardous waste to conduct a waste determination to identify the hazardous waste, label, and store the hazardous waste in compatible containers in a containment facility, train personnel in the appropriate procedures, and transport the waste under manifest to RCRA-permitted treatment, storage or disposal facilities. These regulations are designed to ensure that the hazardous waste is properly handled and treated or disposed of in a permitted facility specifically designed to accommodate the hazardous waste. Implementation of these regulations prevents illegal dumping of hazardous waste and protects air quality, surface and groundwater quality, and soils from contamination.

- The Nevada Hazardous Materials Law (NRS CH. 459) also addresses the handling, use, disposal, and cleanup of nuclear and other hazardous materials in Nevada. Regulated Substances, which includes petroleum and petroleum-based substances, are regulated under 40 CFR 280. These regulations establish the performance standards for new petroleum underground storage tanks (UST), general operation requirements, release detection, release reporting and investigation, and release response and corrective action for UST containing petroleum products.
- A State Fire Marshall Hazardous Material Storage Permit is required for the storage (aboveground or underground) of hazardous materials that meet the inventory threshold quantity. Typical hazardous materials regulated are flammable liquids such as gasoline, combustible liquids such as diesel fuel, compressed gases, cryogens, and dry cleaning solvents. In addition, the storage of Highly Hazardous Substances is regulated under this program. Implementation of this program will prevent the release of hazardous materials into the environment and protect adjacent property and local communities.

5.18.2 Comparative Analysis of Alternatives

5.18.2.1 No Action Alternative

DIRECT EFFECTS

No direct effects from hazardous materials would occur.

Under the No Action Alternative, the Corps would not issue a CWA Section 404 permit and the USFWS would not issue an incidental take permit. Additionally, denial of the 404 permit would result in the disallowance of modification (i.e., dredge or fill) of WOUS within the Development Area. Without this permit, development of a planned community, designed in accordance with the resource conservation features included in the Preferred Alternative, would not be possible. Denial of the Section 404 permit, unto itself, would not preclude future land development within the project area altogether. It would, however, preclude some of the resource conservation features identified under the Preferred Alternative. If the No Action Alternative is chosen, it is anticipated that private CSI lands in Lincoln County would be sold to individual landowners, who would be responsible for obtaining required incidental take permits and Section 404 permits. If future land development were to occur under individual ESA Section 10 and CWA Section 404 permits (or 404 permits and ESA Section 7 incidental take statements), compliance with hazardous materials regulations would also be required of such development. As a result, no adverse effects from the use of hazardous materials would be expected.

INDIRECT EFFECTS

Under the No Action Alternative, no indirect effects from hazardous materials would occur.

If the No Action Alternative were chosen, and private CSI lands in Lincoln County are sold to individual landowners as a result, commercial development may occur on some of the individual landowners' properties. The potential for businesses and homeowners to use and store hazardous materials could exist. However, compliance with hazardous materials regulations would be required, thus no adverse effects would be expected, although the potential for accidents would exist.

5.18.2.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

DIRECT EFFECTS

During the construction period, development and implementation of a project specific SWPPP would be required of all contractors and subcontractors. The specific plan would be reviewed and facilities inspected by the designated CSI Environmental Monitor for compliance with the Master SWPPP prior to construction. The temporary BMPs, hazardous material storage, and solid waste handling facilities would continue to be inspected by the Environmental Monitor for compliance during construction. The required training of contractor and subcontractor staff on the permit requirements by the Environmental Monitor would facilitate

compliance with the SWPPP and other regulatory requirements including air quality. Contractor and/or subcontractor compliance with the SWPPP would control the release of pollutants, including sediment, hazardous materials, and hazardous and solid waste into WOUS.

During the post-construction period, facilities that store hazardous materials and regulated substance or generate hazardous waste are required to comply with the following regulations as appropriate:

- State Fire Marshall Hazardous Material Storage permit requirements for the storage of hazardous materials that meet the threshold quantity, which includes flammable and combustible liquids, compressed gases, and cryogens.
- Permits, fees, and inspections associated with storage of hazardous waste in the state of Nevada (NRS 459).
- RCRA Hazardous Waste regulations utilize the "cradle to grave" concept. These regulations are designed to control the generation, transportation, treatment, storage, and disposal of hazardous waste.
- The RCRA UST regulations establish the performance standard controlling the design and construction, release detection, reporting, and corrective action for new USTs.

Compliance with these state and federal regulations would control the release of hazardous materials, hazardous waste, and regulated substance into WOUS and would reduce the potential for impacts from these hazardous materials to less-than-significant levels.

INDIRECT EFFECTS

During the construction of the numerous projects, including the development of the entire proposed community, contractors and subcontractors would be required to comply with the General Permit, NVR 100000, conditions through the preparation and implementation of an individual project-specific SWPPP.

During the post-construction periods when the mix of residential, commercial and recreational improvements are completed, facilities that store hazardous material would be required to comply with the State Fire Marshall Hazardous Material Storage requirements. Facilities that generate hazardous waste would be required to comply with the RCRA hazardous waste regulations, and facilities that store regulated substances are required to comply with the UST regulations and storage regulations of regulated substances designated by NRS 459.

The implementation of these permit conditions or regulations would be consistent with the information presented above in the evaluation criteria section and discussed under Direct Effects. Compliance with these state and federal regulations would control the release of hazardous materials, hazardous waste, and regulated substance into WOUS and reduce the potential impacts from these hazardous materials to less-than-significant levels.

5.18.2.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

DIRECT AND INDIRECT EFFECTS

Direct and indirect effects would be the same as those described for the Preferred Alternative.

5.19 SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

NEPA requires consideration of "the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (40 CFR 1502.16). As declared by Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

None of the alternatives produces a regional-scale loss of natural resources or ecosystems as a consequence of its implementation, but each alternative has a different level of effect on various resources.

5.19.1 No Action Alternative

Under the No Action Alternative, no tradeoff between short-term uses and long-term productivity would occur.

If CSI private lands were sold to individual landowners, development could occur in the project area, although the level of development would be dependent upon future incidental take and Section 404 permits for individual segments of the area. It is assumed in the analysis that due to lack of existing infrastructure and a comprehensive planning process, less than the full acreage would be developed, if development were to occur under the No Action Alternative. If development were to occur, without a comprehensive planning process in place, conservation measures to mitigate for the long-term adverse effects of development on WOUS and Covered Species would also be less effective than for the two action alternatives. However, development would be subject to the same development code and would result in long-term benefits to Lincoln County from increased housing and economic opportunity. The level of this benefit would depend upon the type and level of development occurring under the individual permits.

5.19.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

In the short-term, the Preferred Alternative would trade off the use of natural resources for the development of economic opportunities and housing. WOUS within the Development Area and BLM utility corridor would be adversely affected but would be mitigated for through the creation of a Perpetual Conservation Easement Grant and a Drainage and Maintenance Easement. However, the CSI MSHCP and its Adaptive Management Plan are intended to balance the development of CSI lands in Lincoln County with initial and sustained funding for actions to conserve habitat for desert tortoise, banded Gila monster, and western burrowing owl on the CSICL and through research actions that would assist with recovery of the threatened desert tortoise. The mitigation measures proposed would also reduce the effects to other wildlife, vegetation, soils, and soundscape. Over the long term, the economic base of Lincoln County would become larger and more able to compete in the modernized economy of the United States, yet Lincoln County would remain primarily rural with healthy waters, ecosystems, and habitats, including habitat for the desert tortoise, banded Gila monster, and western burrowing owl.

5.19.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features.

Short-term and long-term effects would be similar to those under the Preferred Alternative, although the level of housing would be higher by 20,879 dwelling units, which would result in increased economic opportunities. However, this increased development, along with no addition of lands to the CSICL, would result in greater impacts to wildlife, soil, and vegetation in the project area.

5.20 UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse impacts are those environmental consequences of an action that cannot be avoided, either by changing the nature of the action or through mitigation, if the action is taken. Therefore, such impacts would remain throughout the duration of the action.

5.20.1 No Action Alternative

Under the No Action Alternative, no adverse effects would occur.

However, if CSI private lands were sold to individual landowners, the CSI private and lease lands (29,002 acres in total) could be developed in the future. This would likely be with less acreage disturbed than under the two action alternatives, due to less development occurring as a result of lack of infrastructure and comprehensive planning. Although the timing and amount of development is uncertain, this development could result in unavoidable adverse impacts to wildlife, threatened and endangered species (including desert tortoise and its critical habitat), soils, vegetation, noise levels, WOUS, and floodplains in the project area, but likely across less acreage than under the Preferred Alternative or Alternative 1. Because the existing land configuration would remain, isolating the lease lands in the middle of the Development Area and creating

habitat fragmentation, effects to desert tortoise and other terrestrial wildlife species from this component of the alternative would be greater than under the Preferred Alternative.

5.20.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

Without conservation measures, up to 21,698 acres (21,454 acres of the Development Area and up to 244 acres of detention basins) of desert tortoise critical habitat and banded Gila monster and western burrowing owl potential habitat would have the potential to be affected by the Covered Activities. However, avoidance measures associated with WOUS are likely to reduce the potential area to be disturbed within the Development Area to 20,716 acres (25.2 acres WOUS preserved with 712.5 acres upland buffer). The total area of desert tortoise habitat likely to be disturbed totals approximately up to 20,960 acres.

Unavoidable adverse effects to WOUS as a result of flood control measures and other Covered Activities would include the loss of 28.2 acres of potentially disturbed WOUS in the Development Area and 5.1 acres in the BLM utility corridor.

Unavoidable adverse impacts would occur to resources in the Development Area and BLM utility corridor as a result of implementing the Preferred Alternative, including conservation measures for special status species and WOUS, with disturbance on 20,716 acres of private lands and up to 244 acres of detention basins in the BLM utility corridor. All of these acres are considered desert tortoise critical habitat. Without conservation measures in place through the CSI MSHCP, which would occur under the Preferred Alternative, up to 21,698 acres (21,454 acres of the Development Area and up to 244 acres of detention basins) of desert tortoise critical habitat would have the potential to be affected by the Covered Activities. However, this potential effect would not be realized under the Preferred Alternative, as conservation measures would be implemented.

The disturbance of 20,716 acres of private lands and up to 244 acres of detention basins in the BLM utility corridor would result in a smaller amount of unavoidable adverse impacts as compared to Alternative 1, but likely a greater amount than under the No Action Alternative. This could result in unavoidable adverse impacts to wildlife, threatened and endangered species (including desert tortoise and desert tortoise critical habitat), soils, vegetation, noise levels, WOUS, and floodplains. Avoidance, minimization, and mitigation measures would be implemented to reduce and mitigate for the effects to WOUS and Covered Species (desert tortoise, banded Gila monster, and western burrowing owl).

5.20.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features

Unavoidable adverse impacts as a result of implementing Alternative 1 on 21,087 acres of CSI private land, 7,548 acres of lease lands, and up to 244 acres of detention basins in the BLM utility corridor would affect the same resources as described for the No Action Alternative and the Preferred Alternative, but at a greater level than the Preferred Alternative, due to an increase of 7,548 acres of land affected and approximately 20,879 additional residential dwelling units on the private lands.

Unavoidable adverse effects to desert tortoise and desert tortoise critical habitat could occur on the full extent of lands disturbed under Alternative 1 (up to 28,879 acres). Mitigation fees and avoidance and minimization measures, such as clearance surveys, would be used to reduce and mitigate for these effects.

Unavoidable adverse effects to WOUS as a result of flood control measures and other Covered Activities under Alternative 1 would be greater than under the Preferred Alternative and would include the loss of 29.8 acres of potentially disturbed WOUS in the Development Area, 5.1 acres in the BLM utility corridor, and up to 6.3 acres in the lease lands in Lincoln County. Avoidance, minimization, and mitigation measures would be implemented to reduce and mitigate for these effects.

5.21 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments of resources are those that cannot be changed over the long term or are permanent. Irretrievable commitments of resources are those that, once gone, cannot be replaced (NPS 2001).

5.21.1 No Action Alternative

Under the No Action Alternative, no irreversible or irretrievable commitments would be made.

If CSI private lands were sold to individual landowners, irreversible and irretrievable commitments could occur from potential development, as a result of altering WOUS, habitat loss, and soil loss across the entire project area, if development were to occur on individual landowners' land and the CSI lease lands. Fossil fuels would be needed for operating equipment to construct any buildings and utility infrastructure on these lands, which would also result in an irreversible commitment of nonrenewable energy sources. The amount of area affected and fossil fuels needed is uncertain, as the extent of the activities is unknown. However, given the lack of infrastructure, it is unlikely that the entire 21,454 acres of private land would be developed.

5.21.2 Preferred Alternative – Restricted and Phased Development of a New Town Consisting of a Planned Community with Resource Management Features

Irreversible and irretrievable commitments as a result of implementing the Preferred Alternative would be the alteration of WOUS (31.7 acres of existing WOUS potentially disturbed), loss of desert tortoise critical habitat to development activities (20,716 acres of private lands and up to 244 acres of detention basin in the BLM utility corridor), loss of habitat for other special status species and wildlife, and the loss of soil as a result of development activities across the Development Area and within the BLM utility corridor. The WOUS would be restored and recreated to offset this impact on overall WOUS and floodplains, but the original configuration would not be regained, and the soil layers would be disturbed. Habitat loss would result from grading, filling, and paving activities. Development of the area would permanently alter the landscape, degrading and removing habitat for terrestrial species, such as the desert tortoise. Without conservation measures for Covered Species and WOUS, up to 21,698 acres (21,454 acres of the Development Area and up to 244 acres of detention basins) of land would have the potential to be affected by the Covered Activities. However, conservation measures would offset this loss through protection of habitat and funding for research and monitoring activities.

Energy conservation built into the design of the planned community, as well as the use of renewable energy sources, would limit the amount of irreversible loss of fossil fuels from the development of housing and infrastructure within the project area.

5.21.3 Alternative 1 – Immediate Issuance of Permits and Development of a New Town Consisting of a Community without Resource Management Features.

Irretrievable and irreversible commitments under Alternative 1 would be for the same resources as described under the Preferred Alternative, although over a greater area of land (on 21,087 acres of CSI private land, 7,548 acres of lease land, and up to 244 acres of detention basins in the BLM utility corridor). Existing WOUS that would be potentially disturbed under Alternative 1 would total 34.9 acres, plus up to 6.3 acres on the Lincoln County lease lands.

5.22 CUMULATIVE EFFECTS

The CEQ Regulations for Implementing the Procedural Provisions of NEPA defines cumulative impacts as:

> *"... [T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7)."*

Past, present, and reasonable foreseeable actions are analyzed to the extent that "they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have an additive and significant relationship to those effects" (CEQ 2005).

CEQ regulations for implementing NEPA require discussing cumulative, connected, and similar actions within the environmental review document. Cumulative actions are actions "which when viewed with other proposed

actions have cumulatively significant impacts and would therefore be discussed in the same [environmental review]" [40 CFR 1508.25(a) (2)].

Connected actions are actions closely related to the proposed action. "Actions are connected if they: (i) automatically trigger other actions which may require environmental review; (ii) cannot or would not proceed unless other actions are taken previously or simultaneously; or (iii) are interdependent parts of a larger action and depend on that larger action for their justification" [40 CFR 1508.25(a) (1)].

Similar actions are actions that occur within a similar time frame or geography. These actions "which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography" [40 CFR 1508.25(a)(1)].

Effects of these three types of actions are analyzed within this cumulative effects section to determine an overall level of cumulative effect on resources.

5.22.1 Cumulative Effects Methodology

Cumulative effects were analyzed by aggregating effects of a given alternative (No Action Alternative, Preferred Alternative, or Alternative 1) with effects of past, present, and reasonably foreseeable future actions on a particular resource. Such actions can be specific, such as construction of a road, or more generalized, such as population growth trends in Lincoln County. Cumulative analysis is not necessarily an additive process, depending upon the resource topic and types of actions; therefore, these aggregate analyses are qualitative in nature.

For the purposes of this analysis, cumulative effects are bounded by time and geography. Because expected effects are likely different for different resource topics, the geographic scope of the cumulative analysis varies for each resource topic. The timeframe for all cumulative analyses is past, present, and the foreseeable future. If a future project or action is highly unlikely to occur, it has not been considered in these analyses.

Other projects and actions considered for this cumulative analysis include the following:

- Build out of CSI Development in Clark County
- Kane Springs Groundwater Development Project
- Clark County Multiple Species Habitat Conservation Plan
- Virgin River Habitat Conservation and Recovery Program
- Ely Energy Center Project 500-kV transmission line within LCCDRA corridor
- Virgin River Conservation Management Assessment
- Southeastern Lincoln County Habitat Conservation Plan
- Build out of the Lincoln County Land Act property
- Alamo Industrial Park and Community Expansion Land Sale
- Muddy River Recovery Implementation Program
- Muddy River MOA
- Coyote Spring Well and Moapa Transmission System Project
- Additional MVWD Groundwater Pumping in Upper Moapa Valley
- Clark, Lincoln, and White Pine Counties Groundwater Development Project
- Lincoln County Groundwater Development and Utility Right-of-Way Project
- Toquop Energy Power Project

- BLM Las Vegas Field Office Programmatic Biological Assessment
- BLM Ely District Resource Management Plan

Some of these projects are described in Section 1.5: Related Planning Efforts. The others are described below.

5.22.1.1 Great Basin Transmission LLC Electrical Transmission Project

The Great Basin Transmission LLC Electrical Transmission Project involves the proposed construction, operation, and maintenance of a 540-mile-long 500 kV transmission line between Midpoint Substation near Twin Falls, Idaho to the Dry Lake area northeast of Las Vegas. Approximately 383 miles of this project would be located in the BLM Ely District within the approved SWIP corridor, located on the west side of U.S. Highway 93. The ROW for the SWIP corridor was granted by the BLM in the 1990s. Great Basin Transmission LLC is currently developing final engineering and construction plans for this project (BLM 2007, Weeks pers. comm.).

5.22.1.2 Coyote Springs 138-kV Transmission Line Project

LCPD is proposing to upgrade a portion of its existing transmission system from 69-kV to 138-kV and construct up to five new substations to provide power to the CSI project. Up to 11.2 miles of transmission line would be upgraded between the proposed Scott Substation to the proposed Sheep Mountain Substation.

The proposed Scott Substation would be located on CSI private property east of U.S. Highway 93 (within Lincoln County), approximately five miles south of the intersection of Kane Springs Road and U.S. Highway 93. The proposed Sheep Mountain Substation would be located on BLM managed land west of U.S. Highway 93 within a right-of-way. Ancillary facilities would include three additional substations, stepdown transformers for fiber optic and cellular tower facilities, and related electrical components. These facilities would be primarily located along State Route 168 (BLM 2007b).

5.22.1.3 Ely Energy Center

Nevada Power Company, in conjunction with Sierra Pacific Power Company have applied to the Public Utility Commission of Nevada to construct and operate a new coal-fired electrical generation facility and associated transmission, switching station, and communication facilities. These facilities would primarily be located on federal land administered by the BLM, Ely, Elko, and Las Vegas offices. A portion of the 500-kV transmission line between the Robinson Summit Switching Station near Ely, and the Harry Allen Switching Station northeast of the intersection of U.S. Highway 93 and I-15, is proposed to be constructed through the Delamar Valley to Kane Springs Valley, and west along the Kane Springs Road, within the 2,640-foot-wide LCCRDA corridor, to U.S. Highway 93 (BLM 2007b).

5.22.1.4 Coyote Spring Well and Moapa Transmission System Project

SNWA is proposing to develop its existing groundwater rights in Coyote Spring Valley Hydrographic Basin. The Nevada State Engineer has permitted 16,300 afy of groundwater in Coyote Spring Valley, of which 9,000 acre-feet are owned by SNWA. The Coyote Spring Well and Moapa Transmission System Project (Coyote Spring Project) would develop and convey 9,000 afy of groundwater from Coyote Spring Valley in northeastern Clark County using new and existing facilities (BLM 2007b).

Development of groundwater resources for this project is subject to Nevada State Engineer Order 1169, which relates to groundwater applications in several adjacent groundwater basins, including Coyote Spring Valley, and holds various permits in abeyance pending the completion of a study of the regional carbonate aquifer system.

5.22.1.5 Lincoln County Land Act Groundwater Development and Utility Right-of-Way Project

LCWD has submitted right-of-way applications for development of up to 15 production water wells to be located in the previously permitted Toquop Energy Project proposed well field area located in the Tule Desert Hydrographic Basin and up to 15 production water wells to be located in the Clover Valley Hydrographic

Basin of southeastern Lincoln County. Collectively, wells in the Tule Desert basin would pump up to 9,340 acre-feet of groundwater per year. Wells in the Clover Valley would pump up to 14,480 acre-feet of groundwater per year. A system of pipelines would collect pumped water for conveyance through a main transmission pipeline southeast to the Lincoln County Land Act development area following, in part, the 2,640-foot-wide LCCRDA corridor. Other utilities, including natural gas, telecommunications, and electrical power, would be brought into the LCLA area along portions of the water pipeline alignment (BLM 2007b).

The existing Tule Desert well field is currently permitted to produce and export 2,100 afy of groundwater. The LCWD has applications pending before the Nevada State Engineer for an additional 7,240 afy in the Tule Desert Basin.

The decision about how much additional water would be permitted, if any, rests with the Nevada State Engineer.

5.22.1.6 Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley

The Moapa Valley Water District's existing water right permit allows for phased increases in groundwater pumping from wells in the Upper Moapa Valley. Current pumping by MVWD is approximately 2,400 afy (up to 7,200 afy are allowed). Similar to the stipulated agreement between USFWS and LCWD, MVWD has agreed to restrict groundwater pumping if the 2.7 cfs "trigger level" at the Warm Springs West flume is reached (BLM 2007b).

5.22.1.7 Clark, Lincoln, and White Pine Counties Groundwater Development Project

In August 2004, SNWA filed an application with the BLM Ely Field Office for rights-of-way for a proposed system of regional groundwater production, conveyance and treatment facilities, and power conveyance facilities in Clark, Lincoln, and White Pine counties. The proposed facilities would develop groundwater from the following six valleys: Spring, Snake, Cave, Dry Lake, Delamar, and Coyote Springs. SNWA is planning to develop approximately 167,000 afy of groundwater which it holds in rights and applications in these valleys. Under a cooperative agreement with SNWA, capacity is also being provided for the Lincoln County Water District (SNWA, 2007). The BLM is currently preparing an EIS for the project. Water rights are being permitted through the Nevada State Engineer's office.

The proposed facilities include approximately 328 miles of pipeline, five pumping stations, six regulating tanks, a buried storage reservoir, a water treatment facility, 14 production well sites, 349 miles of overhead power lines, eight electrical substations, and four hydroturbine energy recovery facilities

SNWA anticipates major facility construction between 2009 through 2018 (SNWA 2007).

5.22.1.8 Kane Springs Valley Groundwater Development Project

The Bureau of Land Management (BLM) has recently closed the comment period (ended August 20, 2007) for the Kane Springs Valley Groundwater Development Project EIS. This EIS analyses the proposed action submitted by the Lincoln County Water District (LCWD) for obtaining ROW access on BLM-managed land. The ROWs, if granted, would authorize LCWD to construct a groundwater conveyance system in Kane Springs Valley. Phase 1 of the proposed action would consist of development of infrastructure to remove and convey 1,000 acre-feet of water. Future phases would be dependent upon water demand and future water rights.

5.22.1.9 Alamo Industrial Park and Community Expansion Land Sale

Lincoln County, under the LCCRDA, proposes the sale of certain parcels of lands administered by the BLM. The public land consists of four parcels located near the town of Alamo, Nevada, along U.S. Highway 93 in Sections 4, 5, 8, and 9 of Township 7 South, Range 61 East (Township 7 South, Range 61 East), Mount Diablo Base and Meridian. All four parcels (A through D) have been included for disposal in the Draft Ely Resource Management Plan (DRMP) and Draft Environmental Impact Statement (DEIS) (BLM 2005). Lincoln County anticipates that the sale of the parcels would immediately follow issuance of the Final RMP/EIS through direct

noncompetitive sale to Lincoln County and through competitive sale to the highest bidder. The proposed use of the lands includes light industrial and housing.

Below, cumulative effects are present by resource topic, in the same order as they are presented in the environmental consequences analysis of the effects of alternatives. A geographic boundary is described for each resource topic, and cumulative effects for each alternative is considered.

5.22.2 Biological Resources

5.22.2.1 Vegetation

Because adverse effects to vegetation types within the Coyote Spring Valley are not expected adjacent to the valley, the extent of the cumulative analysis is the Coyote Spring Valley. Effects of groundwater development could affect riparian vegetation along the Muddy River and associated springs; therefore, this area is also considered in the scope of cumulative analysis for vegetation.

5.22.2.1.1 No Action Alternative

Cumulative impacts on vegetation resources are generally additive and proportional to the amount of ground disturbance within specific habitat areas. Within the Coyote Spring Valley, vegetation types include salt desert scrub, creosote-bursage scrub, and Mojave mixed scrub. These vegetation types are characteristic of the Mojave Desert Scrub Ecosystem (RECON 2000).

Development of a BLM utility corridor along U.S. Highway 93 for groundwater pipelines, detention basins, and powerlines would result in ground disturbance and loss of vegetation. Construction of a new town on CSI lands in Clark County would result in loss and alteration of vegetation and a potential increase in non-native, invasive plants, although a native plant nursery, protection of vegetation within the CSICL, and other mitigation measures would restore disturbed areas with native plants, provide a seed source for restoration elsewhere, and manage for non-native plants. These measures will minimize the effects of the No Action Alternative, however the vegetation on disturbed areas will require many years to return to the predisturbance condition.

Drought and other climatic variations due to climate change could result in short-term and long-term adverse effects to vegetation biomass and composition. The Intergovernmental Panel on Climate Change (IPCC) predicts that there is a 90 percent probability that extreme weather events, warmer temperatures, and regional drought will increase in the northern hemisphere as a result of climate change (IPCC 2007). Recent global-circulation models are projecting intensified xerification and northward extension of North American deserts along with rising temperatures (Wagner 2008). Such changes could affect plants that are dependent on cool seasonal rains in the desert. Plant generalists, such as invasive species, and plants adapted to extreme temperatures, such as nonnative grasses, would be expected to increase in distribution and abundance. Rising temperatures could result in phenological shifts in plant species (see wildlife, cumulative effects for further discussion).

Rising temperatures as a result of climate change could also result in prolonged summer droughts, and increase the likelihood and intensity of fire events in the Mojave desert. Historically, fire in the Mojave has been infrequent and a rare event. Woody shrubs and cacti would be most susceptible as these vegetation types are most often killed by fire and those that survive are vulnerable to recurrent fire (Brooks and Pike 2001). An increase in fire frequency would also negatively impact many perennial desert plant species since these species are extremely slow growing, long lived and not specifically adapted to fire. Therefore, post-fire recovery would take decades.

Management of adjacent lands under BLM's Ely District Resource Management Plan, once finalized, would be likely to emphasize management of natural vegetation communities within an ecosystem context and active management for eradicating non-native plants. Because of this, remaining vegetation communities within Coyote Spring Valley would overall not be adversely affected by the cumulative effect of these projects, although a portion of vegetation would be permanently altered. Therefore, effects would not be considered significant.

Riparian vegetation along the Muddy River and associated springs could potentially be affected from groundwater development within the White River Groundwater Flow System (see cumulative effects analysis for Hydrology and Water Quality). However, a MOA for groundwater development within the Coyote Spring Valley, California Wash, and Muddy River Springs Area groundwater basins would ensure that surface water flows would not drop below a certain level (USFWS 2006). This would offset the potential adverse effects to riparian vegetation in this area.

5.22.2.1.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects would be greater for the Preferred Alternative than those described for the No Action Alternative. Under the Preferred Alternative, up to an additional 20,960 acres (20,716 acres from the CSI Development and up to 244 acres from detention basin construction in the BLM utility corridor) of Mojave desert scrub vegetation would be disturbed. However, 7,548 acres of Mojave desert scrub vegetation in Lincoln County would be Permanently protected and managed as the CSICL, which would help to offset impacts to vegetation. In addition, CSI would develop and implement a Weed Management Plan and mitigation fees collected through the CSI MSHCP would be used to fund research on fire and habitat restoration in the Mojave desert. Information gained from this research would be expected to benefit fire restoration efforts within the Mojave desert.

5.22.2.1.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects would be greater than those described for the Preferred Alternative, as lands in Lincoln County would not be protected in the CSICL. Mojave desert scrub vegetation would be disturbed on up to 29,246 acres of land (on 21,087 acres of private land plus 7,548 acres of lease land and up to 244 acres from construction of detention basins), which would be available for development or other authorized uses. Similar mitigation and conservation measures as those in the Preferred Alternative would be developed and implemented for Alternative 1

5.22.2.2 Wildlife

The geographic extent for the cumulative analysis of wildlife will be the Coyote Spring Valley, surrounding federal lands, and the area surrounding the headwaters of the Muddy River.

5.22.2.2.1 No Action Alternative

The No Action Alternative would contribute no additional effects to wildlife and their habitat if Section 10 and Section 404 permits were not issued. The closest development to CSI private lands in Lincoln County is the development of CSI lands in Clark County (6,881 acres). As part of the development of CSI private lands in Clark County, detention basins are being constructed in the BLM utility corridor west of U.S. Highway 93 in Clark County. Development of CSI lands in Clark County and construction within the BLM utility corridor,would disturb and fragment habitat for wildlife species, such as bighorn sheep. However, the reconfiguration of CSI private and lease land (reserve land) within Clark County would minimize habitat fragmentation by consolidating the lease land west of the private land, which would result in the lease land being contiguous with the adjacent undisturbed public lands, ACECs.

Continued management of BLM’s ACECs, wilderness areas, and the Desert National Wildlife Range that surround the CSI Development in Clark County and other development in the Coyote Spring Valley would continue to protect wildlife species in these areas and maintain large tracts of unfragmented land for wildlife migration and dispersal. Species on lands that would be subject to development would be displaced onto these adjacent undisturbed lands.

Overall, the large tracts of land within and surrounding the Coyote Spring Valley would provide refuge for terrestrial wildlife species; however, habitat values would be much lower near the development and would improve as the distance from town increases, as there would be an inverse relationship with the demand for outdoor recreation activities.

In addition to the loss of habitat and displacement, drought and other climatic changes could contribute adverse effects to demographics and habitat for terrestrial and aquatic species. The Intergovernmental Panel on Climate Change (IPCC) predicts that there is a 90 percent probability that extreme weather events, warmer temperatures, and regional drought will increase in the northern hemisphere as a result of climate change (IPCC 2007). In the past 60 years, the frequency of storms with extreme precipitation has increased in Nevada by 29 percent (Madsen and Figdor 2007). Climate models show the southwestern U.S. has entered a period of drought that will continue into the next century (Seager et al. 2007). Changes in local southern Nevada climatic patterns cannot be definitively tied to global climate change; however, they are consistent with IPCC predicted patterns of extreme precipitation, warmer than average temperatures and drought (Redmond 2007). Therefore, climate change is likely to impact wildlife and its habitat through predicted increases in extreme precipitation and drought which may affect distribution and abundance of wildlife. It is anticipated that there would be movement of species to cooler areas, and increases in the survival of heat tolerant species and in abundance of habitat generalists (e.g., insects and invasive species) (Hoshovsky 2007). In addition, an increase in extreme events would most likely affect populations living at the edge of their physiological tolerances (Parmesan and Matthews 2006) and exacerbate threats to sensitive species.

Climate change also has the potential to affect wildlife that have a strong linkage to seasonal change. One of the clearest signals of biological response to rising temperatures has been shifts in species phenology (Forchhammer et al. 1998, Walther et al 2002, Parmesan 2006). Root et. al (2005) examined large scale trends across the Northern Hemisphere on 130 birds, insect, and plant species that showed significant phenological shifts. Based on their research, it is estimated that spring events such as blooming, insect emergence, and migratory bird arrival dates are occurring 3.2 days earlier per decade. These authors found that higher latitude species are showing stronger responses than those in lower latitude areas. The change in timing of emergence dates for insects, clutch initiation dates for birds, and flowering could disturb local food webs with some animals appearing ahead or behind of others on which they rely for food. The extent to which climate change would affect the phenology of wildlife in the southwestern U.S. in not known with certainty at this time.

A pipeline and other infrastructure development constructed within the BLM utility corridor ROW along U.S. Highway 93 in Coyote Spring Valley and within the BLM utility corridor along Kane Springs Road would result in localized adverse effects to small mammals and reptiles, as they both parallel already disturbed areas. The existence of U.S. Highway 93, and to a lesser extent, Kane Springs Road would continue to result in some level of fragmentation for some wildlife species, such as those with limited dispersal abilities, and would continue to act as a source of road mortality.

Flow in the Muddy River and associated springs could potentially be affected from groundwater development within the White River Groundwater Flow System (see cumulative effects analysis for Hydrology and Water Quality). However, a MOA for groundwater development within the Coyote Spring Valley, California Wash, and Muddy River Springs Area groundwater basins would ensure that surface water flows would not drop below a certain level (USFWS 2006). This would offset the potential adverse effects to fishes and other aquatic and riparian organisms in this area.

5.22.2.2.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects for wildlife would be greater for the Preferred Alternative than those described for the No Action Alternative, because the amount of lands disturbed in Lincoln County would be greater. Up to an additional 20,960 acres (20,716 acres from the CSI development and up to 244 acres from the construction of detention basins) of wildlife habitat would be disturbed. Permanent protection and management of 13,767 acres of the CSICL would help offset impacts to habitat. In addition, the results of research efforts funded by the CSI MSHCP are expected to have beneficial effects to other wildlife and their habitat that would likely extend beyond the project area.

5.22.2.2.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects would be more adverse than for Alternative 1 than those described for the Preferred Alternative, as 7,548 acres would not be added to the CSICL to further protect wildlife and their habitats. Up

to 29,246 acres of land (on 21,087 acres of private land plus 7,548 acres of lease land and 244 acres from construction of detention basins) would be available for development or other authorized uses. Similar mitigation and conservation measures as those in the Preferred Alternative would be developed and implemented for Alternative 1.

5.22.2.3 Special Status Species

The geographic extent for cumulative effects on special status species includes the Coyote Spring Valley, surrounding federal lands, and the area including and surrounding the headwaters of the Muddy River. For desert tortoise, this analysis has been extended to all of Lincoln and Clark counties.

5.22.2.3.1 No Action Alternative

Currently, approximately 171,015 acres of habitat within the Clark and Lincoln counties have been disturbed or would be disturbed in the foreseeable future (Table 5-37). The No Action Alternative would contribute no additional effects to special status species, such as the desert tortoise, and their habitat if Section 10 and Section 404 permits were not issued.

The closest development to CSI private lands in Lincoln County is the development of CSI lands in Clark County (6,881 acres). As part of the development of CSI private lands in Clark County, detention basins are being constructed in the BLM utility corridor west of U.S. Highway 93 in Clark County. Development of CSI lands in Clark County and construction within the BLM utility corridor, would disturb and fragment habitat for sensitive wildlife species including critical habitat for desert tortoise. However, the setting aside of 6,881 acres of land to be protected and reconfigurating of CSI private and lease land (reserve land) within Clark County would minimize habitat fragmentation and provide protection for special status species. Lease lands would be consolidated west of the CSI private land in Clark County and be contiguous with the adjacent the Mormon Mesa CHU for desert tortoise and BLM ACECs.

Continued management of the Mormon Mesa CHU, BLM's ACECs, wilderness areas, and the Desert National Wildlife Range (the 1.6 million-acre DNWR contains 150,000 acres of desert tortoise habitat) that surround the CSI Development in Clark County and other development in the Coyote Spring Valley would continue to protect special status species such as the desert tortoise, banded Gila monster, and burrowing owl in these areas and maintain large tracts of unfragmented land for these species. Species on lands that would be subject to development would be displaced onto these adjacent undisturbed lands.

Indirect effects on surrounding lands from increased fragmentation from development, predators, noise, recreation, and other actions could also occur. Adverse effects to desert tortoise from development of the LCLA lands, Alamo Industrial Park and Community Expansion Area, and Toquop Energy Project and maintenance of road and railroad ROWs would be offset by conservation measures as identified in the Southeastern Lincoln County Habitat Conservation Plan, which addresses incidental take for desert tortoise and southwestern willow flycatcher.

In 2005, approximately 403,000 acres of desert tortoise habitat burned southern Nevada, including 15,559 acres (4 percent) of the Mormon Mesa CHU. In 2006, one fire burned 22 acres of the Mormon Mesa CHU. Table 5-37 highlights the potential for habitat disturbance of all projects considered as having potential cumulative effects to this project. Activities on BLM lands in both the Ely and Las Vegas field offices would have adverse effects on desert tortoise, although minimization and mitigation measures have been proposed and large acreages of BLM lands have been protected for desert tortoise as ACECs.

Drought and other climatic variations due to climatic change could also adversely affect desert tortoise and the viability of its habitat. Even a relatively short-term drought combined with little or no vegetation biomass can result in a severe reduction in adult tortoise survival (Longshore et al. 2003) and also affects clutch size and reproduction (Turner et al. 1986, 1987; Avery et al. 2002). The Intergovernmental Panel on Climate Change has suggested that increasingly reliable regional climate change projections are now available as the result of improved modeling capabilities and advanced understanding of climate systems (Christensen et al. 2007). Twenty-one Atmosphere-Ocean General Circulation Models were run to predict regional temperature and precipitation in 2080 through 2099 as changed from conditions that occurred between 1980 and 1999. General predictions for the geographic range of the desert tortoise's listed population suggest a 3.5 to 4.0ºC (6.3 to

7.2ºF) increase in annual mean temperature, with the greatest increases occurring in summer (June-July-August mean up to 5ºC (9ºF) increase) (Christensen et al. 2007). Precipitation will likely decrease by 5 to 15 percent annually in the region, with winter precipitation decreasing in the range of 5 to 20 percent (Christensen et al. 2007). Because germination of the tortoise's food plants is highly dependent on cool season rains, the forage base could be reduced due to increasing temperatures and decreasing precipitation in winter. Currently, little is known about specific direct effects of climate change on the desert tortoise or its habitat.

Table 5-37 Acres Disturbed or to be Disturbed of Desert Tortoise Habitat Within the Cumulative Effects Analysis Area

Project	Desert Tortoise Habitat Disturbed (Acres)
CSI Development in Lincoln County	depends upon alternative (not included in total below)
CSI Development in Clark County	included in Clark County MSHCP acreage below
Coyote Spring Well and Moapa Transmission System Project	121.7 acres
Toquop Energy Project	640 acres
Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley	unknown, none if no new wells are constructed
Clark, Lincoln, and White Pine Counties Groundwater Development Project	unknown
Alamo Industrial Park and Community Expansion Sale	included in SLCHCP
Ely Energy Center	0 acre, outside of desert tortoise's range
Coyote Springs 138-kV Transmission Line Project	165.5 acres of permanent disturbance and 125.1 acres of temporary disturbance
Great Basin Transmission LLC Electrical Transmission Project	160 acres of permanent disturbance and 165 acres of temporary disturbance
BLM LVFO Programmatic BA	5,280 acres
BLY Ely District RMP	programmatic plan for the Ely Field Office, includes 203,790 acres of ACECs currently designated for protection of desert tortoise habitat in Lincoln County, Nevada; no disturbance of desert tortoise habitat would occur as a direct result of the RMP
Muddy River MOA	None
Muddy River RIP	unknown, likely none, as activities would be focused along the Muddy River and its floodplain
buildout of LCLA property	included in SLCHCP acreages below
Virgin River Conservation Management Assessment	conservation measures will be proposed, no adverse effects anticipated
Southeastern Lincoln County Habitat Conservation Plan	18,476 acres total affected by activities covered under the SLCHCP, offset by conservation measures
Virgin River Habitat Conservation and Recovery Program	any effects to desert tortoise addressed through CC MSHCP
Kane Springs Groundwater Development Project	23 acres of permanent habitat disturbance, 191 acres of temporary habitat disturbance
Reservoir and Flood Control Facilities in the BLM utility corridor Environmental Assessment for Pardee Homes of Nevada	426.79 acres of permanent disturbance and 241.80 acres of temporary disturbance from detention basins
Southern Nevada fire complex from 2005	Approximately 403,000 acres were disturbed in southern Nevada
Clark County MSHCP	up to 145,000 acres of desert tortoise habitat disturbed, permitted under the CCMSHCP and offset by conservation measures
Total	**greater than 171,015 acres of desert tortoise habitat disturbed in Lincoln and Clark counties, Nevada; approximately 403,000 acres were disturbed from fires, many of the acres likely overlap with the 171,015 acres disturbed by other projects and actions**

Flow in the Muddy River and associated springs could potentially be affected by groundwater development within the White River Groundwater Flow System (see cumulative effects analysis for Hydrology and Water Quality). However, a MOA for groundwater development within the Coyote Spring Valley, California Wash, and Muddy River Springs Area groundwater basins would ensure that surface water flows would not drop below a certain level (USFWS 2006). This would offset the potential adverse effects to Moapa dace, Virgin River chub, and other special status species such as southwestern willow flycatcher and yellow-billed cuckoo, which occur in this area.

5.22.2.3.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall, cumulative effects for special status species would be greater for the Preferred Alternative than those described for the No Action Alternative, because habitat fragmentation would occur and the amount of lands disturbed in Lincoln County would be greater. An additional 20,960 acres (20,716 acres from the CSI Development and up to 244 acres from the construction of detention basins) of habitat, including desert tortoise critical habitat, would be disturbed. Permanent protection and management of 13,767 acres of the CSICL would help offset impacts to desert tortoise habitat. In addition, the results of research efforts funded by the CSI MSHCP are expected to have beneficial effects to desert tortoise and their habitat that could extend beyond the project area. In addition, the reconfiguration of CSI private and lease land (reserve land) within Lincoln County would minimize habitat fragmentation as the lease lands would be consolidated west of the CSI private land in Clark County and be contiguous with the protected CSI lease lands in Clark County and the adjacent undisturbed lands that are part of the Mormon Mesa CHU and are managed as BLM ACECs.

Development of a MSHCP for CSI lands in Lincoln County would provide a mechanism to protect terrestrial special status species such as the banded Gila monster and western burrowing owl occurring within the project area. Conservation measures would include adding lands to the existing CSICL as described above, funding research and management initiatives for the banded Gila monster, western burrowing owl, desert tortoise, and implementing best management practices. These measures would enhance recovery actions for the desert tortoise, a beneficial effect to the species. Surveys for other Covered, Evaluation, and Watch List Species would provide additional scientific information that could assist in future recovery efforts and reducing effects of the phased CSI Development Project.

For the Moapa dace, a MOA for groundwater development within the Coyote Spring Valley, California Wash, and Muddy River Springs Area groundwater basins would ensure that surface water flows would not drop below a certain level (USFWS 2006). In addition to best management practices, this would offset the potential adverse effects to fishes and other aquatic and riparian organisms in this area. Impacts to special status aquatic species would expected not be minimized although greater than the No Action Alternative.

5.22.2.3.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects would be greater for Alternative 1 than those described for the Preferred Alternative. Up to 29,246 acres of land (on 21,087 acres of private land plus 7,548 acres of lease land and up to 244 acres from construction of detention basins) would be available for development or other authorized uses. Similar mitigation and conservation measures as those in the Preferred Alternative would be developed and implemented for Alternative 1.

5.22.3 Waters of the United States

For cumulative analysis of WOUS, the extent considered for analysis was the Pahranagat Wash incised ephemeral channel and tributaries' floodplains within Coyote Spring Valley.

5.22.3.1 No Action Alternative

The No Action Alternative would contribute no effects to WOUS. Effects of other plans and projects would include the potential for effects to WOUS from construction in the BLM utility corridor west of U.S. Highway 93, the Kane Springs BLM utility corridor, and development on CSI lands in Clark County. If CSI private

lands were sold to individual landowners, the potential for development near the Pahranagat Wash incised ephemeral channel in Coyote Spring Valley in Lincoln County would exist, although it would not be guaranteed to occur. If this action did occur, WOUS could be altered to address potential flooding from increased impervious surfaces. Separate permitting of individual parcels impacting WOUS could result in a greater effect to WOUS than if a comprehensive stormwater plan existed. If development occurred in Lincoln County by individual landowners, affected WOUS would be restored or created in other areas to ensure that flood capacity would not be altered. WOUS would be affected in a similar manner as part of the CSI development in Clark County, where WOUS were affected and mitigation occurred to address adverse effects. For effects to WOUS from development in the two BLM utility corridors (west of U.S. Highway 93 and along Kane Springs Road), mitigation would also be required. Because of mitigation actions, no significant cumulative effects would be expected.

5.22.3.2 Preferred Alternative

Effects of other plans and projects would be the same as those described for the cumulative effects for the No Action Alternative. Combined with the mitigated effects of the Preferred Alternative, buffers and conservation easements and stormwater management structures would mitigate for adverse effects to WOUS. Cumulative effects to WOUS would likely be adverse, but not significant. These effects would likely be greater than those that could occur under the No Action Alternative as the amount of development would likely be less under the No Action Alternative.

5.22.3.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be greater than those described under the Preferred Alternative, although a greater density of the CSI Development in Lincoln County would slightly increase the acres of affected WOUS and activities on the lease lands in Lincoln County, which could result in adverse effects to WOUS in the Coyote Spring Valley. All activities (i.e., CSI development in Clark County, CSI Development in Lincoln County, Kane Springs Groundwater Development Project, BLM utility corridors) would require mitigation under Section 404 of the CWA; therefore, effects would be adverse, but not significant.

5.22.4 Hydrology and Water Quality

For groundwater hydrology, the extent of the cumulative analysis is alluvial and carbonate-rock aquifers within the following hydrographic basins: Coyote Spring Valley (210), Muddy River Springs Area (219), Lower Meadow Valley Wash (205), Lake Valley (183), Panaca Valley (203), Patterson Valley (202), Spring Valley (184), Kane Springs Valley (206), Garden Valley (172), Coal Valley (171), Pahroc Valley (208), Cave Valley (180), Dry Lake Valley (181), Delamar Valley (182), White River Valley (207), Rose Valley (199), Eagle Valley (200), and Spring Valley (201). The Lincoln County Conservation, Recreation, and Development Act of 2004 mandated that a study be conducted of the water resources of the Basin and Range Carbonate Aquifer System (BARCAS) in White Pine County and adjacent areas in Nevada and Utah. USGS, in cooperation with other agencies and scientists, conducted the BARCAS study to investigate groundwater quantity, quality, and flow characteristics in the deep carbonate and alluvial aquifers of White Pine County, Nevada, and groundwater basins located in White Pine and Lincoln counties in Nevada, and adjacent areas in Utah. The final report was issued in December 2007 (USGS 2007).

The extent of the cumulative analysis for surface water hydrology and water quality is the Pahranagat Wash incised ephemeral channel downstream to the Muddy River.

Table 5-38 shows permitted groundwater water rights and pending applications within the hydrographic basins considered in this cumulative analysis. The perennial yields presented in this table were obtained from underground hydrologic abstracts available on the Nevada Division of Water Resources website for each hydrogeographic basin (NDWR 2007). However, the State Engineer may determine the yield of a basin to be more or less than presented in this table at any given time. For example, a recent ruling on April 16, 2007, (Ruling 5726) for Spring Valley determined the perennial yield of the groundwater in the basin to be 80,000 afy/yr, a much larger number than presented in Table 5-38 (Nevada State Engineer 2007). It should also be noted that the amount of pending applications does not indicate the additional future afy/yr expected to

be removed from each basin, as the State Engineer would have to determine whether or not to approve applications. It is unlikely that all pending applications would be approved in a given basin. Table 5-39 shows the predicted groundwater usage for various projects that could occur within the basins described in Table 5-38.

5.22.4.1 No Action Alternative

5.22.4.1.1 Groundwater

No effects to groundwater would be contributed by the No Action Alternative. Depending upon the specifics of future projects, in terms of total water removed and pumping levels, the carbonate and alluvial aquifers present under the CSI lands in Lincoln County could be significantly affected. The potential for these projects to result in effects to surface waters such as the Muddy River also exists. This could include effects to water quality through a reduction in water levels. Previous studies on groundwater development by SNWA, in conjunction with the Las Vegas Valley Water Department (LVVWD 2001, as cited in BLM 2007b), USFWS (2006, as cited in BLM 2007b), and Schaefer and Harrill (1995, as cited in BLM 2007b), in part or all of the White River Groundwater Flow System, have indicated that groundwater levels within the carbonate aquifer would decline and flows in the springs and the Muddy River would also be reduced after several decades of groundwater pumping. The Lincoln County Conservation, Recreation, and Development Act of 2004 mandated that a study be conducted of the water resources of the Basin and Range Carbonate Aquifer System (BARCAS) in White Pine County and adjacent areas in Nevada and Utah. USGS, in cooperation with the Desert Research Institute and the State of Utah, conducted the BARCAS study to investigate groundwater quantity, quality, and flow characteristics in the deep carbonate and alluvial aquifers of White Pine County, Nevada, and groundwater basins located in White Pine and Lincoln counties in Nevada, and adjacent areas in Utah (which includes part of the Great Salt Lake Desert Flow System). The final report, which was issued in December 2007, stated that current groundwater pumpage (127,000 afa in 2005) has not significantly altered evapotranspiration (ET) rates, distribution of native vegetation, or regional springflow in the area. Groundwater quality was determined to be in compliance with safe drinking water standards and generally safe for human consumption. This groundwater study could also provide a basis for modeling future groundwater withdrawals and their effects on surface and groundwater in the area (USGS 2007). However, a study on effects of groundwater development combining the water rights and pending applications in Table 5-38 has not been completed.

In Order Number 1169, the Nevada State Engineer has held in abeyance carbonate-rock aquifer system groundwater applications pending or to be filed in specified hydrogeographic basins, including some basins in this cumulative analysis: Coyote Spring Valley (210), Black Muddy River Springs (219), and Lower Moapa Valley (220). This is for further study of the appropriation of water from the carbonate-rock aquifer system, in Lincoln and Clark counties, Nevada, "… until further information is obtained by stressing the aquifer by those water rights already permitted for the appropriation of water from the carbonate-rock aquifer system." The Order specifies that a study must be conducted to provide information on the effect of pumping permitted rights that are not yet in production to prior existing rights and on the environment. The results of this study will be used to assess long-term impacts to the aquifer and down-gradient flows. No additional water rights to appropriate waters will be issued until after the required pump test and report are completed, and the Nevada State Engineer has determined that he has sufficient data to support the granting of additional permits. Appendix K has further information on the administration of Nevada Water Law.

The participants in the study must, at a minimum, include LVVWD, SNWA, CSI, Nevada Power Company, and MVWD. Under direction of the Nevada State Engineer, these entities are conducting pump tests and monitoring activities within the basins in accordance with State Engineer Order 1169. A regional Water Monitoring Plan was approved by the Nevada State Engineer on March 14, 2005, and is being implemented by several parties under the State Engineer's direction. It is anticipated that the Water Monitoring Plan will be modified as data is collected or changed circumstances warrant.

Table 5-38 Existing Underground Water Rights and Pending Applications Within the Cumulative Effects Area of Analysis[a]

Hydrographic Basin	Perennial Yield (afa) [b]	Permitted Water Rights (afa)	Pending Water Rights Applications (afa)	Designated Groundwater Basin[d]
Coyote Spring Valley (210)	18,000 [a]	16,304.00	135,000[c]	Yes
Muddy River Springs Area (219)	37,000 [a]	14,776.78	335.10 [a]	Yes
Lower Meadow Valley Wash (205)	5,000 [a]	23,617.67	8,255.27 [a]	Yes
Lower Moapa Valley (220)	16,500 [a]	5,713.25	489 [a]	Yes
Lake Valley (183)	12,000 [a]	24,686.86	130,895.07 [c]	Yes
Panaca Valley (203)	9,000 [a]	24,516.98	669.30 [a]	Yes
Patterson Valley (202)	4,500 [a]	5,486.01	26,687.31 [a]	No
Spring Valley (201)	4,100 [a]	1,097.58	1,640 [a]	No
Kane Springs Valley (206)	Up to 500 [a]	1,000	17,000 [a]	No
Garden Valley (172)	6,000 [a]	559.21	12,223.75 [a]	No
Coal Valley (171)	6,000 [a]	38.12	33,071.16 [a]	No
Pahroc Valley (208)	21,000 [a]	29.89	0 [a]	No
Cave Valley (180)	2,000 [a]	46.58	24,571.59 [a]	No
Dry Lake Valley (181)	2,500 [a]	56.56	21,823.75 [a]	No
Delamar Valley (182)	3,000 [a]	7.24	21,823.52 [a]	No
White River Valley (207)	37,000 [a]	31,818.51	42,512.08 [a]	No
Rose Valley (199)	100 [a]	1660.50	0 [a]	No
Eagle Valley (200)	300 [a]	379.12	0 [a]	No
Spring Valley (184)	80,000 [a]	89,378.23	84,773.30 [a]	No

[a] Source: NDWR 2007 Underground Active water rights summaries obtained from NDWR's website and subject to the following disclaimer "The information reflected on these pages is derived by interpretations of paper records and is being provided for convenience only. Please refer to the actual water rights records for the details on any water right as such records may differ from the information provided herein. The Division of Water Resources is not responsible for errors, omissions, or accuracy of the information herein. There are no warranties, expressed or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying this information. Please notify the Division of Water Resources of any errors."

[b] Defined by the Nevada Division of Water Resources as "The amount of usable water from a ground-water aquifer that can be economically withdrawn and consumed each year for an indefinite period of time. It can not exceed the natural recharge to that aquifer and ultimately is limited to maximum amount of discharge that can be utilized for beneficial use."

[c] The pending application numbers for Basin 210 and 183 have been modified from the number shown on NDWR's website. SNWA and CSI have a combined total of approximately 135,000 afa under pending applications in Basin 210. Also, CSI and Tuffy Ranch together have pending applications in Basin 183 for approximately 100,000 afa.

[d] Designated Groundwater Basins are defined by Nevada Division of Water Resources as those where permitted groundwater rights approach or exceed the estimated average annual recharge and water resources are being depleted. These basins require additional administration by the State of Nevada Division of Water Resources (NDWR 2007). Basins in this table that are Designated Groundwater Basins are indicated with a Yes in the right-hand column.

Table 5-39 Past, Present, and Foreseeable Future Groundwater Basin Projects

Project	Amount of Groundwater (afa)	Hydrographic Basins	Type of Aquifer	Monitoring and Adaptive Management
CSI Development in Lincoln County	Up to 70,000 from other groundwater development projects included in this table; CSI and its affiliates already hold	A combination of all basins included in cumulative analysis, via third-party and/or separate NEPA and ESA consultation, includes the Clark, Lincoln, and White Pine Counties Groundwater Development Project and Kane Springs Valley Groundwater Development Project. Existing water rights to be allocated to the CSI Development in Lincoln County by CSI and its affiliates include: Lake Valley (183): 24,100 afa; Panaca Valley (203): 5,119 afa; Patterson Valley (202): 1,280 afa; Rose Valley (199): 1,410 afa; Eagle Valley (200): 720 afa; Spring Valley (184): 779 afa	Alluvial and carbonate	Monitoring and adaptive management would apply to the groundwater development projects that would supply this water to the CSI Development in Lincoln County.
CSI development in Clark County	Groundwater included in Muddy River MOA, with an additional 15,000 afa needed from other groundwater projects included in this table	Coyote Spring Valley Basin for Muddy River MOA-related groundwater, which is also subject to State Engineer Order 1169, and a combination of all basins included in cumulative analysis, via third-party and/or separate NEPA and ESA consultation, includes the Clark, Lincoln, and White Pine Counties Groundwater Development Project and Kane Springs Valley Groundwater Development Project for the additional 15,000 afa needed.	Alluvial and carbonate	Provisions in the Muddy River MOA and any additional requirements under State Engineer Order 1169 would apply to groundwater in Coyote Spring Valley Basin, while for the additional 15,000 afa, monitoring and adaptive management would apply to the groundwater development projects that would supply this water to the CSI Development in Clark County.
Muddy River MOA	16,100	Coyote Spring Valley (210) and California Wash (outside of cumulative analysis area)	Alluvial and carbonate	The Nevada State Engineer has held in abeyance groundwater applications pending in this hydrogeographic basin, for further study of the appropriation of water from the carbonate-rock aquifer system. A study must be conducted to provide information on the effect of pumping permitted rights not yet in production. Under the Muddy River MOA, monitoring of surface waters and required reductions and/or cessations in pumping would prevent adverse effects to surface waters.
Great Basin Transmission LLC Electric Transmission Project	Minimal	Unknown	Unknown	Unknown
Coyote Spring 138-kV Transmission Line Project	Minimal	Unknown	Unknown	Unknown

Table 5-39 Past, Present, and Foreseeable Future Groundwater Basin Projects

Project	Amount of Groundwater (afa)	Hydrographic Basins	Type of Aquifer	Monitoring and Adaptive Management
Ely Energy Center Project 500-kV transmission line within LCCDRA corridor	Minimal	Unknown	Unknown	Unknown
Coyote Spring Well and Moapa Transmission System Project	9,000	Coyote Spring Valley (210)	Carbonate	The Nevada State Engineer has held in abeyance groundwater applications pending in this hydrogeographic basin, for further study of the appropriation of water from the carbonate-rock aquifer system. A study must be conducted to provide information on the effect of pumping permitted rights not yet in production. Also, under the Muddy River MOA, monitoring of surface waters and required reductions and/or cessations in pumping would prevent adverse effects to surface waters.
Additional Moapa Valley Water District Groundwater Pumping in Upper Moapa Valley	Up to 7,200	Muddy River Springs Area (219)	Carbonate	The Nevada State Engineer has held in abeyance groundwater applications pending in this hydrogeographic basin, for further study of the appropriation of water from the carbonate-rock aquifer system. A study must be conducted to provide information on the effect of pumping permitted rights not yet in production. Also, under the Muddy River MOA, monitoring of surface waters and required reductions and/or cessations in pumping would prevent adverse effects to surface waters.
Clark, Lincoln, and White Pine Counties Groundwater Development Project	Up to 200,000, with 40,000 afa in Spring Valley (184) already awarded by the State Engineer for the first 10 years, increasing to 60,000 afa in the 11th year	Spring Valley (184), Cave Valley (180), Dry Lake (181), Delamar (182), Coyote Spring Valley (210), and Snake Valley (outside of cumulative analysis area)	Carbonate	The EIS is still in preparation for this project, but the Conceptual Plan of Development (SNWA 2007) discusses the monitoring plan that would be in place under the Proposed Action of the EIS. SNWA and DOI agencies are preparing hydrologic and biologic monitoring, management, and mitigation plans for SNWA's permitted water rights in Spring Valley, pursuant to a stipulation for withdrawal of protest signed in September 2006.
Kane Springs Valley Groundwater Development Project	Up to 5,000	Kane Springs Valley (206),Muddy River Springs Area (219), Coyote Spring Valley (210)	Carbonate	By a stipulation between USFWS and LCWD/Vidler, groundwater development of the carbonate aquifer in the Kane Springs Basin was made subject to Trigger Levels set out in the Muddy River MOA, and a monitoring, management, and mitigation plan was required for any application granted to LCWD/Vidler in the Kane Springs Basin.
Alamo Industrial Park and Community Expansion Area	500 to 750	Existing water rights appropriated to the City of Alamo, Pahranagat Valley (209)	Unknown	Unknown

Groundwater development of the carbonate aquifer in the Muddy River Springs Area, California Wash, Coyote Spring Valley, and the Kane Springs Valley (by stipulation) groundwater basins by SNWA, CSI, MVWD, and the Tribe would occur in compliance with the Muddy River MOA, signed by the parties in April 2006. This MOA implemented triggers for protecting the Moapa dace in relation to their groundwater development actions in these basins. These actions would ensure that groundwater pumping would not result in significant adverse effects to surface waters in the Muddy River system, through monitoring and required reductions and/or cessations in pumping to protect surface flows. By stipulation between LCWD/Vidler and USFWS (Stipulation), groundwater development of the carbonate aquifer in the Kane Springs Basin by LCWD/Vidler was made subject to the "Trigger Levels" set out in the Muddy River MOA. The parties requested that a Monitoring, Management, and Mitigation Plan to the Stipulation be included as part of the terms and conditions of any application that are granted. The goal of the plan is to collectively manage the development of LCWD water rights in the Kane Springs Valley Hydrographic Basin, to avoid losses to senior water rights held by the USFWS in the Moapa Valley National Wildlife Range. This would thereby protect surface waters within the range.

Measures included in the Nevada State Engineer Order 1169, the MOA, and the Stipulation would alleviate potential cumulative impacts to the Muddy River system and carbonate aquifer depletion from many of the directly associated projects, as well as those of more distant projects.

Climate change is expected to significantly affect water resources in the western United States by the mid 21st century (Leung et al. 2004; Barnett et al. 2008). Climate change is generally predicted to result in increased air and water temperatures, decreased water quality, increased evaporation rates, increased proportion of precipitation as rain instead of snow, earlier and shorter runoff seasons, and increased variability in precipitation patterns (Adams and Peck 2006). Several studies have shown declining snowpack, earlier spring snowmelt, and earlier stream runoff in the western United States over the past few decades (Hamlet et al., 2005; Stewart et al., 2005; Knowles et al. 2006). Many of these characteristics influence groundwater (Viessman and Lewis 1996), and these changes would lower infiltration and the recharge of aquifers, ultimately reducing discharge.

Overall, significant cumulative impacts could potentially occur to groundwater as a result of groundwater development projects in the cumulative analysis area, but would likely be avoided by monitoring and mitigation plans associated with the Muddy River MOA, Stipulation between USFWS and LCWD/Vidler, and components of EIS processes (e.g., proposed monitoring plan for Clark, Lincoln, and White Pine Counties Groundwater Development Project). SNWA and DOI agencies are preparing hydrologic and biologic monitoring, management, and mitigation plans for SNWA's permitted water rights in Spring Valley, pursuant to a stipulation for withdrawal of protest signed in September 2006. It should be noted that some of the hydrographic basins in the analysis area are overallocated or have the potential to become overallocated and have been identified by Nevada Division of Water Resources as "Designated Groundwater Basins" (see Table 5-38).

Potential effects to the alluvial (basin fill) aquifer in the hydrographic basins of the cumulative analysis area could also occur. However, the draft USGS study indicates that the alluvial aquifer has large amounts of storage and, for groundwater withdrawals from the basin fill aquifer, the relatively large volume of water stored in this aquifer likely would mitigate current or near future reductions in the volume of groundwater outflow or other pre-development discharge components (USGS 2007). At present, it is not understood whether water rights for the alluvial aquifer would result in adverse effects to groundwater, but it is expected that this would be more likely in those basins identified as "Designated Groundwater Basins" by NDWR (see Table 5-37).

5.22.4.1.2 Surface Water Hydrology and Water Quality

WOUS to the south in Clark County would be affected by development of lands adjacent to the CSI Lincoln County lands (the CSI development in Clark County). Affected WOUS would be restored or created in other areas to ensure that flood capacity would not be altered. Temporary sedimentation effects would be mitigated for through construction timing during no flow periods, sediment traps, fencing, and other measures. Associated detention basins would level out peak flows, but would not affect the amount of flow entering the Pahranagat Wash incised ephemeral channel. However, under the No Action Alternative, individual

landowners would be responsible for developing water and sewer facilities and for stormwater management on CSI lands in Lincoln County. Management on individually-owned parcels may alter the options available to comprehensively manage stormwater flows and water quality. If future development occurred, desert dry wash WOUS would likely be altered, which could result in localized, cumulative adverse effects to surface water peak flows during storm events and temporary sedimentation. The Pahranagat Wash incised ephemeral channel has continuous flow between the CSI development and the Muddy River and further downstream to Lake Mead only during very large storm events (100 years or greater). Therefore, while localized impacts to desert dry washes may occur, cumulative impacts to the Muddy River are unlikely. Cumulative effects to stormwater flows in Coyote Spring Valley would not be significant.

5.22.4.2 Preferred Alternative

5.22.4.2.1 Groundwater

Effects of other plans and projects would be the same as described for the No Action Alternative. Development of the CSI lands in Lincoln County would require up to 70,000 afa of water, which would likely be supplied from groundwater water rights[20]. Many of these water rights would result from other groundwater development projects discussed in Table 5-39. The extent of CSI Development in Lincoln County would be dependent upon the availability of water, which would be acquired from separate groundwater development projects in southern Nevada. No additional cumulative effects would be likely to occur from the Preferred Alternative, as for the foreseeable future, plans are to provide water to the CSI Development in Lincoln County from these separate groundwater development projects (e.g., Kane Springs Groundwater Project and Clark, Lincoln and White Pine County Groundwater Project), which have mitigation and monitoring plans associated with them. Were these projects unable to provide CSI with water under the Preferred Alternative, other projects that would require separate NEPA analysis would provide water (as BLM rights-of-way would be used to bring water to the CSI lands in Lincoln County). As such, future cumulative effects analyses would address these unforeseen potential future effects to groundwater resources. Thus, significant cumulative impacts would be unlikely to occur to the carbonate aquifer groundwater, as described under the No Action Alternative. Conservation measures for some pumping in the Kane Springs Valley, Coyote Spring Valley, California Wash, and Muddy River Springs basins would reduce potential impacts.

As described for the No Action Alternative, alluvial aquifers could also be adversely affected from increased demand in those basins identified as Designated Groundwater Basins by NDWR; although the recent USGS study indicates a large amount of storage capacity in the basin fill aquifers in the area (USGS 2007).

5.22.4.2.2 Surface Water Hydrology and Water Quality

Effects of other plans and projects would be the same as described for the No Action Alternative. Stormwater hydrology would be altered in Lincoln and Clark counties from the development of projects in the BLM utility corridors along U.S. Highway 93 and Kane Springs Road and primarily from construction on CSI lands in Clark and Lincoln counties, but all of these activities would be mitigated for through restoration and creation of WOUS to maintain flood capacity.

Considering the large size of the Pahranagat Wash incised ephemeral channel watershed, local attenuation of the stormwater hydrograph would be observable for localized thunderstorms. Changes to the hydrograph during larger, regional storms would be imperceptible because of the relatively small contribution of the CSI development in Lincoln County and Clark counties, including the drainages west of U.S. Highway 93. Conveyance channels through the adjacent town being developed by CSI in Clark County would be designed to accommodate the anticipated stormwater flows released from detention basins. Associated detention basins would level out peak flows, but would not affect the amount of flow entering the Pahranagat Wash incised ephemeral channel. Furthermore, the Pahranagat Wash incised ephemeral channel only has continuous flow to

[20] For calculating water supply demand, 0.71 afa per single family was assumed. This calculation was based upon discussions with the Las Vegas Valley Water District for assessing demand for CSI private lands in Clark County, a separate project. It is assumed that Lincoln County will adopt the same standard. Once a metered history is available, estimates of the water supply demand may be reduced from this initial estimate.

the Muddy River during very large storm events (100-year storm or greater). As described above in the groundwater cumulative analysis, effects to the Muddy River and Pahranagat Wash would be unlikely from current and foreseeable future groundwater projects, as the Muddy River MOA and Stipulation for Kane Springs Valley would require monitoring and trigger levels to prevent adverse effects to surface waters. Therefore, these actions would not result in significant cumulative adverse impacts to the hydrology of the WOUS within the developments, and adverse effects to habitat for species in downstream areas are not likely to occur.

Mitigation measures of the various projects would minimize and avoid effects to water quality. Potential spills would be avoided and minimized during construction so as to not affect water quality. Temporary sedimentation effects would be mitigated for through construction timing during no flow periods, sediment traps, fencing, and other measures. Other measures would minimize and avoid potential spills during construction from affecting water quality. Effects to water quality would therefore not be significant.

5.22.4.3 Alternative 1

5.22.4.3.1 Groundwater

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to groundwater under Alternative 1 would be greater than those described under the Preferred Alternative, as an additional 15,000 afa of groundwater would be needed for the increased amount of CSI Development in Lincoln County.

5.22.4.3.2 Surface Water Hydrology and Water Quality

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to surface water hydrology and water quality would be similar to those described under the Preferred Alternative, although an increased level of development within the CSI Lincoln County lands would result in the potential for increased adverse effects to hydrology. Avoidance, minimization, and mitigation measures would reduce adverse effects to hydrology and water quality to a less-than-significant level.

5.22.5 Cultural Resources

For the cumulative analysis of cultural resources, the extent of analysis was the Coyote Spring Valley.

5.22.5.1 No Action Alternative

Cumulative effects to cultural resources can result from individually minor but collectively significant actions taking place over time. Cumulative impacts can also result when the incremental impacts are considered with other past, present, or reasonably foreseeable future actions, regardless of the project proponent. A residential development is currently occurring adjacent to the project area on CSI private lands in Clark County, which could result in adverse effects to cultural resources. However, a mitigation plan is currently planned to address impacts to cultural resources for lands in Clark County. The No Action Alternative would contribute no effects to cultural resources. If development were to occur after the No Action Alternative is implemented, it is anticipated that a similar mitigation plan, which shall include additional surveys and evaluation of cultural resources as well as data collection shall be completed.

5.22.5.2 Preferred Alternative

Effects from other projects and plans would be the same as described for the No Action Alternative (i.e., potential adverse effects and a mitigation plan on adjacent lands in Clark County). Under the Preferred Alternative, disturbance of 20,716 acres of private land and up to 244 acres within the BLM utility corridor could occur and has the potential to result in adverse effects to cultural resources. However, it is anticipated that a similar mitigation plan, which shall include additional surveys and evaluation of cultural resources as well as data collection shall be completed under the Preferred Alternative.

With the implementation of the mitigation plan in Clark County and the analysis contained in this document, the impacts directly and indirectly associated with the development of the Coyote Springs Project in Lincoln County have been considered, and the additive effects of the proposed action to other past, present, and reasonably foreseeable actions do not reveal any new levels of significant impact that have not been identified. The environmental impacts of these other actions do not substantively alter the environmental consequences of the development of the Coyote Springs Project in Lincoln County.

5.22.5.3 Alternative 1

Effects from other projects and plans would be the same as described for the No Action Alternative (i.e., potential adverse effects and a mitigation plan on adjacent lands in Clark County). Cumulative effects could be greater than described for the Preferred Alternative, as a greater amount of land would be disturbed within the Coyote Spring Valley. However, it is anticipated that a similar mitigation plan, which shall include additional surveys and evaluation of cultural resources as well as data collection shall be completed under Alternative 1.

5.22.6 Soils and Geologic Resources

For the cumulative analysis of soils and geologic resources, the extent of analysis was the Coyote Spring Valley.

5.22.6.1 No Action Alternative

Cumulative impacts on soil resources are generally additive and proportional to the amount of ground disturbance within specific habitat areas. Within the Coyote Spring Valley, vegetation types include salt desert scrub, creosote-bursage scrub, and Mojave mixed scrub. These vegetation types are characteristic of the Mojave Desert Scrub Ecosystem (RECON 2000).

Development of a BLM utility corridor along U.S. Highway 93 for a groundwater pipeline, power lines, and detention basins and development of another BLM utility corridor along Kane Springs Road for telecommunications, power lines, and a groundwater pipeline would result in ground disturbance. Construction of a new town on CSI lands in Clark County would result in loss and alteration of soils, although mitigation measures would limit areas of disturbance and prevent erosion. The No Action Alternative would contribute no effects to soils or geologic resources. If CSI private lands in Lincoln County were sold to individual landowners and development were to occur within Lincoln County on those lands, the result would be loss and alteration of soil on up to 29,002 acres. Management of adjacent lands under BLM's Ely District Resource Management Plan would emphasize prevention of soil erosion, conservation of soil resources, and maintaining long-term soil quality. Because of this, on the whole, soils within Coyote Spring Valley would not be adversely affected by the cumulative effect of these projects, although a portion of soils (less than seven percent, from CSI development in Clark and Lincoln counties and pipeline construction in the BLM utility corridor) would be permanently altered. However, effects would not be considered significant.

Minerals would be affected by continued management of fluid and solid mineral resources on BLM lands. According to the Preferred Alternative of the Draft BLM Ely District Resource Management Plan, mineral rights could be leased on lands to the west of CSI lands, but closed to leasing on the north and east areas of BLM lands, where Areas of Environmental Concern are located. If the 21,454 acres of private lands in Lincoln County were to be sold and subdivided, then the potential would exist for development of this land for aggregate material or for minerals, although this scenario would be unlikely, given the higher value obtained for residential uses. Thus, no effects to geological resources would occur in the Coyote Spring Valley.

5.22.6.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on soils would be greater than described under the No Action Alternative, as a greater level of development in Lincoln County would be expected. Cumulative effects to minerals and geological resources would be less than those described for the No Action Alternative, as no mineral development would occur on the CSI lands in Lincoln County.

5.22.6.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on soils would be similar to those described for the No Action Alternative, although increased density of residential units would result in increased impervious surfaces above soils, which would permanently cap additional soils.

Cumulative effects to geological resources would be the same as those described for the Preferred Alternative.

5.22.7 Ecologically Critical Areas

For cumulative analysis of ecologically critical areas, the extent of analysis was the Mormon Mesa, Coyote Spring, and Kane Springs ACECs and adjacent lands.

5.22.7.1 No Action Alternative

The No Action Alternative would contribute no effects to ecologically critical areas. Other plans and projects could have indirect effects to ecologically critical areas. These include projects where rights-of-way are sought across BLM lands, which would result in increased fragmentation of desert tortoise habitat, the purpose of these designated ecologically critical areas. The development of the LCLA lands and the development of CSI property in Clark County would also increase fragmentation of desert tortoise habitat within ACECs, as these developments are located adjacent to ACECs established for desert tortoise. If groundwater development from various groundwater development projects in the region were to affect Lower Meadow Valley Wash, then this development could potentially adversely affect the Mormon Mesa ACEC and its protection of the area. If private CSI lands in Lincoln County were sold to individual landowners, development of those lands also would result in further fragmentation and isolation of the Mormon Mesa and Kane Springs ACECs. Overall, these indirect effects would be detectable but would not be at a level where impacts would be significant. Large tracts of contiguous land surrounding the ACECs would remain, and management of these lands would be unchanged. Also, the Preferred Alternative of the BLM Ely District Proposed Resource Management Plan/Final Environmental Impact Statement calls for the creation of 17 additional ACECs within the District Resource Management Plan, which would be beneficial to existing ACECs (BLM 2007b).

5.22.7.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Under the Preferred Alternative, cumulative effects on Ecologically Critical Areas would be potentially greater than those described for the No Action Alternative. Under this alternative, 20,716 acres of land in the Development Area and up to 244 acres in the BLM utility corridor would be developed and 13,767 acres of land adjacent to two ACECs would be protected, resulting in low indirect effects from fragmentation and potentially increased visitor use and the increased potential for vandalism and illegal OHV use. However, as the boundary between the Development Area and the CSICL would remain fenced until the completion of a management plan, the increased potential for vandalism and illegal OHV use would be unlikely to be realized. Because of the continuing relative isolation of the Kane Springs, Coyote Spring, and Mormon Mesa ACECs, as well as the likely addition of 18 more ACECs in the BLM Ely District, overall cumulative effects would not be significant.

5.22.7.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Under Alternative 1, cumulative effects on Ecologically Critical Areas would be greater than those described under the Preferred Alternative, as development of roads and utilities could occur adjacent to ACECs. Under this alternative, up to 28,879 acres of land would be developed adjacent to two ACECs, resulting in indirect adverse effects from fragmentation and potentially from increased visitor use. Because of the continuing relative isolation of the Kane Springs, Coyote Spring, and Mormon Mesa ACECs, as well as the likely addition of 18 more ACECs in the BLM Ely District, overall cumulative effects would not be significant.

5.22.8 Wilderness Areas

The cumulative analysis of wilderness areas would have the same extent and effects as described for Ecologically Critical Areas.

5.22.9 Visual Resources

For the cumulative analysis of visual resources, the extent considered was the Coyote Spring Valley.

5.22.9.1 No Action Alternative

The No Action Alternative would contribute no effects to visual resources. Approximately 6,881 acres of land in Clark County, adjacent to the Development Area, are currently being developed for residential and commercial purposes. Development of detention basins and utility infrastructure in the BLM utility corridor west of U.S. Highway 93 and development of utility infrastructure in the BLM utility corridor along Kane Springs Road would also result in low levels of adverse effects to visual resources in the Coyote Spring Valley. If CSI private lands were sold to individual landowners, these lands could be subdivided and sold to individual landowners, which could include higher elevations to the east under the existing land configuration. Overall, these changes would result in a very noticeable change detectable by those driving by. However, the rural character of the surrounding area would remain, as this land would continue to be managed by the BLM for the foreseeable future. Also, all construction of the CSI planned development in Lincoln County would be required to meet aesthetic requirements stated in Title 15 of the Lincoln County Code. Changes in the viewshed would be expected, but because requirements would be met, adverse effects to visual resources would not be expected.

5.22.9.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on visual resources in the Coyote Spring Valley would be greater than those described for the No Action Alternative, although development in Lincoln County would only occur at lower levels.

5.22.9.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects on visual resources in the Coyote Spring Valley would be similar to those described for the Preferred Alternative, although alteration of the viewshed would be greater due to construction at higher elevations under the Alternative 1.

5.22.10 Air Quality

The geographic extent considered for the cumulative analysis of air quality is the Coyote Spring Valley airshed.

5.22.10.1 No Action Alternative

The No Action Alternative would contribute no effects to air quality. Past, present, and foreseeable future actions that could affect air quality in the Coyote Spring Valley airshed include the following: potential construction activities on CSI lands in Lincoln County if lands were sold to individual landowners (up to 21,454 acres fully developed and up to 7,548 acres of Land Lease Agreement activities on CSI lease lands in Lincoln County), construction activities on CSI lands in Clark County (totaling 6,881 acres), well construction on CSI lands in Clark and Lincoln counties, and construction of pipelines and other utilities in the U.S. Highway 93 BLM utility corridor to the west of CSI lands and in the Kane Springs BLM utility corridor just to the north of CSI lands heading northeast.

A temporary increase in emissions of PM_{10} or $PM_{2.5}$ would be expected to occur from the initial land surface disturbance activities for these projects.

Emissions from a future coal-burning power plant to the east of the Coyote Spring Valley airshed could enter the Coyote Spring Valley airshed, depending upon air movements and the amount emitted by the proposed Toquop Energy Power Project.

Incremental increases in emissions of NOx, SO_2, CO, and VOCs would be expected to occur in the short term from mobile combustion sources associated with construction equipment, and the temporary increase in vehicle traffic for construction of the CSI Developments in Lincoln and Clark counties. These near-ground releases would be expected to stay in the vicinity of the developments.

If blasting is used for pipeline construction of the Kane Springs pipeline, ammonium nitrate and fuel oil (ANFO) would be a source of gaseous pollutants. ANFO blasting can also cause fugitive emissions of NO_x, CO, and SO_2. Emissions from blasting agents would be limited by restricting its use to the smallest area possible.

All construction and operation activities within the region are required to comply with local, state or federal policies, including the implementation of a Fugitive Dust Control Plan. As such, cumulative air quality impacts would not be anticipated to exceed state or federal ambient air quality standards.

The addition of residents in Coyote Spring Valley from the CSI development in Clark County and potential development by individual landowners in Lincoln County would result in increased emissions from vehicles and potential emissions from other sources over the long term. Increased OHV use in the area as a result of an increased population base would be possible, which in turn could result in localized, infrequent emissions and increases in fugitive dust.

It is unlikely that these sources would be sufficient to exceed state or federal ambient air standards, as the condition of the current air quality is high and no other sources of pollution exist for 20 miles in any direction. Therefore, long-term cumulative effects would be unlikely to be significant. However, it should be noted that combustion of fossil fuels from the equipment used for construction activities associated with various projects and the coal-based Toquop Energy Power project would contribute to an increase in greenhouse gases, such as carbon dioxide (CO_2).

5.22.10.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects for the Preferred Alternative would be greater than those described for the No Action Alternative from construction on 20,716 acres that would occur in a phased approach. As such, potential air quality impacts of the CSI development in Clark County, construction of various utilities and detention basins in the BLM utility corridor west of U.S. Highway 93, and the utility infrastructure in the BLM utility corridor along Kane Springs Road would occur alongside a limited amount of construction activities on CSI lands in Lincoln County, which would reduce air quality contamination at a given time, but extend the lower potential for fugitive dust over a longer period. Air contamination could still occur from the development and operation of the Toquop Energy Power Project. An increased population base would result in higher levels of vehicle emissions than under the No Action Alternative. However, because all construction and operation activities would comply with local, state, and federal policies and current air quality is high with no other sources of pollution for 20 miles in any direction, cumulative effects to air quality would not be anticipated to exceed state or federal ambient air quality standards. However, it should be noted that combustion of fossil fuels from the equipment used for construction activities associated with various projects and the coal-based Toquop Energy Power project would contribute to an increase in greenhouse gases, such as carbon dioxide (CO_2).

5.22.10.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to air quality for Alternative 1 would be similar to those described for the No Action Alternative, although it would be guaranteed that all CSI private and lease land in Lincoln County would be developed immediately. Because all construction and operation activities would comply with local, state, and federal policies, cumulative effects to air quality would not be anticipated to exceed state or federal ambient air quality standards. However, it should be noted that combustion of fossil fuels from the equipment used for

construction activities associated with various projects and the coal-based Toquop Energy Power project would contribute to an increase in greenhouse gases, such as carbon dioxide (CO_2).

5.22.11 Transportation and Circulation

The geographic extent considered for the cumulative analysis is the Coyote Spring Valley and the U.S. Highway 93 corridor from I-15 north to Alamo.

5.22.11.1 No Action Alternative

The No Action Alternative would contribute no effects to transportation and circulation. Temporary effects to traffic would occur from development projects in Clark County on CSI lands, on individual landowners' lands in Lincoln County (if CSI sold their private lands and development were to occur as a result), new residential development around the town of Alamo, and construction of power lines, telecommunication lines, and pipelines along the BLM utility corridor west of U.S. Highway 93, detention basins west of U.S. Highway 93 in Clark County, installation of wells on CSI lands in Clark County, and development of a Kane Springs pipeline and associated utilities. Traffic could be slowed or rerouted during periods of construction.

In the long term, the Master Traffic Study for the CSI development in Clark County concluded that at build out of the community in Clark County, U.S. Highway 93 and State Route 168 may require additional lanes of traffic and improvements to the U.S. Highway 93 and State Route 168 intersection. Also at build out, improvements to the I-15 and U.S. Highway 93 interchange, including ramp widening and intersection signalization, along with auxiliary passing lanes for trucks climbing hills, may be necessary. Without a coordinated traffic plan for development on lands in Lincoln County sold to individual landowners by CSI, traffic problems could ensue. However, it is unlikely that the full extent of CSI lands in Lincoln County would be developed if development were to occur. Localized traffic problems may also occur due to new development surrounding Alamo, although a traffic plan may be developed to address this potential issue. The traffic plan for the CSI development in Clark County would result in many road and traffic improvements, which would reduce the adverse impacts of a no traffic plan for any development that could occur in Lincoln County.

5.22.11.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to transportation and circulation would not be adversely affected under the Preferred Alternative, as traffic and circulation on CSI lands in Lincoln County would be coordinated and existing Levels of Service on U.S. Highway 93 would be maintained as stated in a Development Agreement with Lincoln County. Therefore, road improvements would be made that would address any long-term effects to traffic and circulation for all CSI lands in Lincoln and Clark counties. Temporary increases in traffic could occur from the various projects (described under the No Action Alternative), as these projects would likely occur prior to road improvements.

5.22.11.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects to transportation and circulation under Alternative 1 would be similar to those described under the Preferred Alternative, although an increase in development units on CSI lands in Lincoln County could result in a greater need for road improvements.

5.22.12 Noise

The geographic extent considered for the cumulative analysis of noise was the Coyote Spring Valley.

5.22.12.1 No Action Alternative

The No Action Alternative would contribute no effects to noise levels. Permanent residents of the Coyote Spring Valley would be exposed to intermittent noise from aircraft deployed from Nellis AFB, located

approximately 40 miles south of the project site. Typical aircraft fly launch and recovery missions in a northeast/southwest pattern and not in the direction of the project area which is nearly due north (USAF 2002). However, the project area is still in the Desert Military Operations Area, which allows for supersonic flight and for military training operations over lands that comprise the Coyote Spring Valley. During peak exercise periods, there may be more than 200 military overflights per day. Military training exercises would continue over the project area and noise as a result of military training operations over the Coyote Spring Valley from aircraft is likely, although intermittent. During times of use, noise from these aircraft can be very loud, as some aircraft are allowed to go supersonic at 5,000 feet AGL in the Desert Military Operations Area.

Road noise from adjacent U.S. Highway 93 would continue to contribute to cumulative noise levels on the CSI lands and in Coyote Spring Valley. Road traffic would increase as a result of potential development in Lincoln County from CSI, as well as CSI development in Clark County. This would result in low-levels of noise that would contribute to overall noise levels primarily during daylight hours.

If development were to occur on CSI lands in Lincoln County as a result of those lands being sold to individual landowners, then short-term construction noise would increase noise levels during the time of development. Lincoln County has no noise regulations and there would be no sensitive receptors in the area, therefore, significant effects would not be expected. Noise levels from development in Clark County would also increase temporarily.

Long-term noise levels would increase as a result of residents and workers inhabiting the CSI lands in Lincoln County and CSI development in Clark County. These noise levels would be expected to be low, resulting from human voices and vehicle use. The No Action Alternative would contribute to cumulative impacts to this resource issue because of the uncertainty of participation of individual landowners in maintaining low noise levels.

Overall, adverse cumulative effects from increases in short- and long-term levels would not be significant, given the low levels of noise generated in the long term. However, for short periods, adverse effects from aircraft over Coyote Spring Valley would continue to occur.

5.22.12.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects of the Preferred Alternative would be slightly greater than those described for the No Action Alternative, as the extent of short-term and long-term noise sources would increase in Coyote Spring Valley.

5.22.12.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects of Alternative 1 would be similar to those described for the Preferred Alternative, although construction noise would occur longer in Lincoln County and a greater number of people would reside in the area, slightly increasing noise levels.

5.22.13 Land Use, Planning, and Zoning

The geographic extent considered for the cumulative analysis of land use planning and zoning was Lincoln County, Nevada.

5.22.13.1 No Action Alternative

The No Action Alternative would contribute no effects to land use, planning, and zoning. If CSI private lands in Lincoln County were sold to individual landowners, development could potentially occur on CSI lands in Lincoln County. If this were to occur, then it would occur within the confines of the CSI Development Agreement and Title 15: Coyote Springs of the Lincoln County Code. Development of CSI lands in Lincoln County would occur in accordance with Title 14: Toquop Township PUD Code. CSI development in Clark County would be developed in accordance with appropriate zoning regulations of Lincoln County.

5.22.13.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. As described for the No Action Alternative, no adverse effects to land use, planning, and zoning would occur under the Preferred Alternative.

5.22.13.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. As described for the Preferred Alternative, no adverse effects to land use, planning, and zoning would occur under Alternative 1.

5.22.14 Recreational Resources

For the cumulative analysis, the extent of analysis for recreational resources was a one hour's drive from the CSI lands in Lincoln County.

5.22.14.1 No Action Alternative

The No Action Alternative would contribute no effects to recreational resources. Land disposals by BLM have reduced total recreation by a small amount in areas near the CSI lands, but these land sales have also provided funding for improvements to recreation management by BLM. Recreational demand would increase in areas near the CSI lands from land development actions on the LCLA lands and potentially on the CSI lands and also from economic development activities in Alamo and Caliente. Increased demand from these increases in population in the near area could potentially result in overuse of areas by OHV users and other recreationists. The Preferred Alternative of the BLM Ely District Draft RMP/EIS calls for restricting OHV use to designated trails and roads (BLM 2005). If development were to occur as a result of CSI private lands in Lincoln County being sold to individual landowners, further demand for recreation could occur. Overall, recreational resources could potentially be impacted from overuse from an increased population. However, these effects are unlikely to be significant, as the total acreage available for recreation and the number of trails is sizeable within an hour of the CSI lands in Lincoln County.

5.22.14.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Under the Preferred Alternative, cumulative effects would be greater than those described for the No Action Alternative. With the construction of 111,000 residential dwelling units on CSI lands, in addition to other expected population increases in the Mesquite area, recreational resources could potentially be impacted from overuse from an increased population. However, these effects are unlikely to be significant, as the total acreage available for recreation and the number of trails within an hour (i.e., 65 mile radius) of the CSI lands in Lincoln County are sizeable. This includes public lands within White Pine, Lincoln, Clark, and Nye counties in Nevada and Washington County in Utah and Mohave County in Arizona. Trails include the Silver State trail accessed from U.S. 93 near Caliente, which is over 240 miles in length, as well as other trails on BLM and USFS lands and private OHV parks in Alamo and North Las Vegas.

5.22.14.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Under Alternative 1, cumulative effects would be similar to those described for the No Action Alternative. With construction of 160,879 residential dwelling units on the CSI lands, in addition to other expected population increases in the Mesquite area, recreational resources could potentially be impacted from overuse from an increased population. However, these effects are unlikely to be significant, as the total acreage available for recreation and the number of trails is sizeable within an hour of the CSI lands in Lincoln County.

5.22.15 Public Services and Utilities

For public services, the extent of the cumulative analysis is Lincoln County.

5.22.15.1 No Action Alternative

The No Action Alternative would contribute no effects to public services and utilities. If private CSI lands in Lincoln County were sold to individual landowners, those lands in Lincoln County could potentially be subdivided with individual landowners becoming responsible for development. Parcel-by-parcel development in the future could result in the lack of adequate public services provided in the area. The Lincoln County Land Act lands in the southeast corner of Lincoln County, comprising 13,500 acres, would also be developed in an area without current public services. Because of the isolation from the rest of Lincoln County, these services would be created as part of developing that area; therefore, no adverse cumulative effects to existing public services and utilities would be expected from the No Action Alternative. Expansion of Alamo and the addition of industrial parks in Alamo and Caliente could create an additional burden on power, water, and sewer needs in these two areas.

5.22.15.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects on public services and utilities would be less than those expected for the No Action Alternative, because under the Preferred Alternative, adequate public services would be planned and constructed to ensure all needs would be met at full build out of the area.

5.22.15.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects on public services and utilities would be similar to those expected for the Preferred Alternative, except under Alternative 1, adequate public services would be planned and constructed to ensure all public service needs for the new town would be met at full build out of the area.

5.22.16 Socioeconomics and Environmental Justice

The area of cumulative analysis for socioeconomics and environmental justice is Lincoln and northeastern Clark counties.

5.22.16.1 No Action Alternative

The No Action Alternative would contribute no effects to socioeconomics and environmental justice. Build out of the CSI lands in Clark County is expected to provide up to 29,000 residential units by completion. If private CSI lands in Lincoln County were sold to individual landowners, those individual landowners on subdivided CSI lands in Lincoln County could likely construct residential developments on up to 21,454 acres of land. It is considered unlikely that the full 21,454 acres would be developed, due to lack of adequate infrastructure. In southeastern Lincoln County, an additional 13,500 acres of lands are proposed for development, which could result in up to 44,500 additional residential units. Around the town of Alamo, up to 1,860 new residential units and an industrial park would be constructed. In total, over 146,000 new residential units could be added to Lincoln County, which could result in an added population of over 362,080 in the next 30 to 40 years if residential development occurred on subdivided CSI lands. Given that the 2000 Census population of Lincoln County was 4,165, this increase in population would be substantial. Effects of adding up to 29,000 residential units to Clark County would not be substantial to Clark County, which had a population of 1,375,765 at the time of the 2000 Census, but it would occur in a remote corner of Clark County, which would have localized socioeconomic effects.

Increased development in Lincoln County would generate employment, income, and increases in the Lincoln County and Clark County tax base. The cumulative effect of the No Action Alternative and other plans and projects could result in the increases to the population in Lincoln and Clark counties mentioned above, which would result in additional demand on police protection, fire protection, emergency medical services, and housing. This could occur if the construction schedules of the projects overlap, as it is likely that the projects would be hiring from the same construction labor force pool. Cumulative effects to the social and economic structure of Lincoln County could be substantial.

Projects likely to occur on federal lands according to the Ely District Resource Management Plan would be unlikely to provide measurable socioeconomic effects in Lincoln or Clark counties. However, increased recreational demand, water development projects, road improvements, and projects adjacent to or within the BLM utility corridors would likely be associated with the increased population and would occur on federal lands, given that Lincoln County has a limited amount of private lands.

Other planned and foreseeable projects with a potential to affect the social and economic structure of Lincoln and Clark counties are being developed in response to the rapidly growing population and economy of the Las Vegas and surrounding metropolitan areas. Community services and infrastructure would likely need to be increased as a result of ongoing residential and commercial development in the region.

No adverse cumulative effects to environmental justice would occur, as all residential development activities and federal land activities with the potential for socioeconomic effects would occur in remote areas away from existing population centers. Beneficial effects to low-income communities could occur, as the local government's ability to supply services would increase with an increased tax base.

5.22.16.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be similar to those described for the No Action Alternative, although up to 111,000 residential units would be constructed on CSI lands in Lincoln County, and much of the associated infrastructure would be supported by this project. This would reduce the potential burden of infrastructure construction and provision of public services on Lincoln County.

5.22.16.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Overall cumulative effects would be very similar to the Preferred Alternative, although a slight increase in the number of residential units in Alternative 1 would result in slightly larger increases in employment, government revenues, and housing.

5.22.17 Hazardous Materials

For hazardous materials, the extent of the cumulative analysis is Lincoln County.

5.22.17.1 No Action Alternative

The No Action Alternative would contribute no effects to hazardous materials. Cumulative effects to human health and safety could occur from various maintenance and construction activities within the area of analysis. These activities have the potential to result in oil or gas spills, injuries to humans, or other accidents. Compliance with state and federal regulations would control the release of hazardous materials, hazardous waste, and regulated substances and would reduce the potential for impacts from these hazardous materials to less-than-significant levels.

5.22.17.2 Preferred Alternative

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be the same as described for the No Action Alternative, although CSI construction would raise the potential for accidents to occur.

5.22.17.3 Alternative 1

Effects of other plans and projects would be the same as described for the No Action Alternative. Cumulative effects would be the same as described for the No Action Alternative, although CSI construction would raise the potential for accidents to occur.

SECTION 6

Consultation and Coordination

Section 6: Consultation and Coordination

6.1 PUBLIC AND AGENCY INVOLVEMENT

Public involvement related to residential development within the Coyote Springs area began in October 2001, when a TSC was convened to obtain input from stakeholders. The TSC included representatives from the USFWS, NDOW, BLM, the Lincoln County Commission, the Clark County Department of Comprehensive Planning, SNWA, USGS Water and Biological Resources Divisions, the Moapa Town Advisory Board, and the Sierra Club.

The USFWS and CSI also initiated a BAS to work through concerns and issues relating to the desert tortoise and residential development at Coyote Springs. The BAS consisted of Dr. Dick Tracy (Director of the Biological Resources Research Center at UNR), Dr. Dennis Murphy of UNR, Dr. Kenneth Nussear (Herpetologist with the Biological Resources Division of the USGS), and Roy Averill-Murray with the USFWS.

A Notice of Intent (NOI) to prepare an EIS and begin scoping was published in the Federal Register on December 4, 2001. The comment period ended on February 4, 2002. Comment letters were received from the following six entities: Red Rock Audubon Society, Sierra Club Southern Nevada Group, Muddy River Regional Environmental Impact Alleviation Committee, National Public Lands Task Force, Nevada Wildlife Federation, Inc., and one individual.

The comment letters suggested addressing the following:

- Lease land management for the benefit of the desert tortoise and other sensitive species;
- Development consistency with state and local land use plans;
- Direct, indirect, and cumulative impacts on natural/biological resources and the existing community structure; and
- Development alternatives, such as relocation of development closer to Las Vegas, or no development at all.

Water development and availability also were issues raised by the TSC. CSI, USFWS and the TSC considered these issues during preparation of the CSI MSHCP.

Since this NOI was issued and public meetings were held, CSI's private land in Clark County was covered under the Clark County MSHCP. Currently, CSI's developable land in Lincoln County, as well as lease land in Lincoln and Clark counties, are the focus of the CSI MSHCP. Because the land covered in the CSI MSHCP has been modified, a second NOI was published in the Federal Register on September 12, 2006 (71 FR 53704-53706). Public scoping meetings were held in Alamo (Nevada) and Moapa (Nevada) on September 26 and 27, 2006, respectively. A second NOI was republished in the Federal Register on November 2, 2006 (71 FR 64555–64556) to correct contact information provided in the notice and extend the comment period to December 4, 2006.

Comments were received by EPA, Nevada Department of Wildlife, Nellis AFB, Center for Biological Diversity, the Toiyable and Southern Nevada Chapters of the Sierra Club, The Nature Conservancy, Southern Nevada Water Authority, Red Rock Audubon Society, one individual from Las Vegas, and two individuals from communities near the CSI lands. Comments included, but were not limited to, the following:

- recommendations of resources to analyze within the EIS, including biological resources, air quality, water resources, visual resources, cultural resources, energy supply, flood control, and hazardous waste;
- suggestions of mitigation measures for protecting desert tortoise, Moapa dace, and other potentially affected species, as well as water, air, and other resources;

- recommendations and requests for addressing cumulative impacts, including the area of effect analyzed cumulatively (White Pine, Lincoln, and Clark counties) and descriptions of other projects with potential cumulative effects;
- a recommendation to include specifics about the land reconfiguration in the EIS;
- recommendations to analyze effects to western burrowing owl, phainopepla, desert pocket mouse, chuckwalla, banded Gila monster, bighorn sheep, Geyer's milkvetch (presumably the commenter was referring to *Astragalus geyeri* var. *triquestrus*), sticky buckwheat, and Beaver Dam breadroot;
- concern over accuracy/adequacy of zone of influence illustrated on project area map;
- concern that several species could appear as urban wildlife concerns; and
- concerns about direct and indirect effects from increased number of vehicles on roads, groundwater development, construction, and other activities as a result of developing a planned community on CSI lands in Lincoln County.

Suggestions by commenters also repeated all of the comments raised during the 2002 comment period. Responses to these comments were incorporated into the CSI Planned Development Project Draft EIS and into the Covered Activities and conservation measures sections of the CSI MSHCP, as appropriate.

The Draft EIS, Draft MSHCP, and Draft Implementation Agreement were released for public comment on November 2, 2007. The 60-day public comment period closed on January 2, 2008, with individual extensions until January 14, 2008 granted to some organizations, when requested. Comments were received from the BLM, EPA, USAF – Nellis AFB, NDOW, Nevada State Clearinghouse, SNWA, Clark County Desert Conservation Program, Western Lands Project, Red Rock Audubon Society, Nevada Outdoor Recreation Association, Center for Biological Diversity, Friends of Nevada Wilderness, Great Basin Water Network, Sierra Club – Toiyable Chapter, and three individuals.

Comments were made on the following aspects of the Draft EIS:

- Purpose and need
- Range of alternatives
- Waters of the United States
- Direct and indirect effects to special status species
- Adequacy of conservation measures
- Water availability
- Effects to groundwater
- Recreation and OHV use
- Bighorn sheep and mule deer
- Banded Gila monster
- Las Vegas buckwheat
- western burrowing owl
- Cultural resources consultations
- Socioeconomics
- Wilderness

For responses to agency comments and general themes of other comments, see Appendix O. Comments and specific responses to individual comments are available by request from U.S. Fish and Wildlife Nevada Fish and Wildlife Office.

6.1.1 Section 106 Consultation

On April 6 and 9, 2007, respectively, the USFWS and BLM delegated certain regulatory responsibilities for complying with Section 106 of the NHPA to the Corps consistent with 36 CFR 800.2(a)2 (Appendix M). Following the delegation of responsibility, the Corps is in the process of consulting with the Nevada SHPO. A mitigation plan has been drafted for the Corps to review and then submit to the SHPO. Prior to the publication of the Record of Decision for this EIS, the Section 106 consultation will have been completed.

6.1.2 Tribal Consultation

An update on archeological surveys conducted in the APE was distributed to the Moapa Band of Paiute on March 27, 2007 (Appendix M). On October 18, 2007 and consistent with Section 106 of the NHPA, the Corps formally requested that Knight and Leavitt Associates act as the Corps' agent in tribal consultation and invited the Kiabab Paiute Tribe, Las Vegas Tribe, Paiute Indian Tribe of Utah, Duckwater Shoshone Tribe, Colorado River Indian Tribe, Ely Colony (Ely Shoshone Council), Fort Mohave Indian Tribe, Chemehuevi Indian Tribe and the Moapa Band of Paiutes to solicit interest and consult regarding the Coyote Springs Project (Appendix M). On November 15, 2007, these same tribes were invited to participate in a field visit (Appendix M). Five tribes, which included the Las Vegas Tribe, Kiabab Paiute Tribe, Paiute Indian Tribe of Utah, Colorado River Indian Tribe, and Moapa Band of Paiutes responded and four attended the site visit. The Las Vegas Tribe did not participate. The site visit occurred on December 13, 2007 and all participants were invited to submit comments on the Coyote Springs Project. These comments appear in Appendix M.

6.2 LIST OF PREPARERS

Name	Title	Degrees	Sections Prepared
U.S. Fish and Wildlife Service			
Leilani Takano	Fish and Wildlife Biologist	M.S. Wildlife Science B.S. Biology	Document review, analyzing impacts, alternatives development, purpose and need
Bob Williams	Field Supervisor, Nevada Fish and Wildlife Office	M.S. Aquatic Ecology B.S. Aquatic Biology	Document review, alternatives development
ENTRIX, Inc.			
Leo Lentsch	Technical Director/Vice President	M.S. Fisheries and Wildlife Biology B.S. Fisheries Biology and Zoology	Document review, analyzing impacts, alternatives development
Ruth Sundermeyer	Project Scientist	M.S. Conservation Biology	Document review, analyzing impacts, alternatives development, purpose and need
Michelle Johnson	Project Scientist	M.S. Natural Resource Planning B.S. Biology	Analyzing impacts, alternatives development, purpose and need, noise, visual resources, ecologically critical areas, wilderness, recreational resources, land use planning and zoning
Gina Morimoto	Project Scientist	M.M.A. Marine Affairs B.A. Marine Biology	Analyzing impacts for biological resources, soil and geologic resources, public services and utilities, and hazard materials, transportation and circulation
Craig Kling	Senior Consultant	M.S. Wildlife Biology B.A. Zoology/Wildlife Biology	Document review
Lori Headrick	Senior Project Manager	B.A. Biology	Analyzing impacts for air quality
Brad Boyes	Senior Air Quality/Noise Engineer	M.B.A. Project Management B.S. Environmental Engineering	Analyzing impacts for air quality
Lance Mobley	Project Scientist	B.A. Geography – Emphasis: Environmental Studies	GIS analysis and cartography
Kimberly Demuth	Senior Consultant	M.S. Historic Preservation of Architecture	Analyzing impacts for cultural resources
Kirk E. Ranzetta	Project Scientist	Ph.D. Urban Affairs and Public Policy M.A. Urban Affairs and Public Policy, Specialization in Historic Preservation B.A. Historic Preservation	Analyzing impacts for cultural resources
Barbara Wyse	Senior Economist	M.S. Environmental and Natural Resource Economics B.A. Environmental Science and Policy	Analyzing impacts for socioeconomics

Name	Title	Degrees	Sections Prepared
Duane Paul	Senior Consultant and Senior Associate	PhD Agricultural Economics M.S. Agricultural Economics B.S. Agricultural Management	Analyzing impacts for socioeconomics
Steve Pavich	Agricultural and Resource Economist	M.S. Agricultural and Resource Economics, B.A. Economics	Analyzing impacts for socioeconomics
Huffman-Broadway Group			
Terry Huffman	Wetland Regulatory Specialist		Analyzing impacts for WOUS
RCI			
JoAnne Robben	Senior Environmental Specialist	M.S. Environmental Science B.A. Biology and Environmental Studies	Fire conservation measures, weed management plan
ROBCYN, LLC, Nevada			
Barry Stubbs			Analysis of off-site alternatives

6.3 DISTRIBUTION

This EIS has been distributed to individuals and organizations who specifically requested a copy of the document. In addition, copies have been sent to the following federal agencies and offices:

- Bureau of Land Management, Ely and Las Vegas Districts
- U.S. Army Corps of Engineers, Sacramento Office
- U.S. Environmental Protection Agency, CED-2 Office
- U.S. Fish and Wildlife Service, Southern Nevada Field Office, Nevada Fish and Wildlife Office, and California and Nevada Operations Office
- Senator Harry Reid's Office
- Senator John Ensign's Office
- Congressman Dean Heller's Office
- Congressman John Porter's Office
- Congresswoman Shelly Berkley's Office

When the EIS was issued, USFWS filed copies with the EPA, who published a Notice of Availability of the EIS in the Federal Register. The USFWS also distributed paper and electronic (on CD-ROM) copies to federal agencies and other requesting parties. The USFWS will provide copies to other interested organizations or individuals on request.

6.3.1 Availability

Copies of the CSI Planned Development Project EIS and MSHCP will be available for public inspection at the following USFWS office:

- Nevada Fish and Wildlife Office
  4701 North Torrey Pines Drive
  Las Vegas, NV 89130
  702-515-5230

Additional copies of the CSI Planned Development Project EIS and associated CSI MSHCP will be available to the public during the public comment period at the following libraries:

- Clark County Library
  1401 E. Flamingo Road
  Las Vegas, Nevada 89119
  702-507-3400
- Moapa Valley Library
  350 N. Moapa Valley Boulevard
  Overton, Nevada 89040
  702-397-2690
- Washoe County Library
  Downtown (Main) Branch
  301 South Center Street
  Reno, Nevada 89501
  775-327-8300
- Alamo Branch Library
  100 North First Street
  Alamo, Nevada 89001
  775-725-3343
- Lincoln County Library
  63 Main Street
  Pioche, Nevada 89043
  775-962-5244

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SECTION 7

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Section 7: References Cited

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