Appendix I

Ecosphere
Environmental Services

CITY OF FARMINGTON
PORTER ARROYO DETENTION FACILITY
BIOLOGICAL ASSESSMENT

Prepared for:

Animas Environmental Services, LLC
624 E. Comanche
Farmington, NM 87401

May 2011

Durango, CO
Cortez, CO
Pagosa Springs, CO
Farmington, NM

TABLE OF CONTENTS

1. INTRODUCTION 1

2. DESCRIPTION OF THE PROPOSED PROJECT 1

2.1 Mitigation Measures 2

3. EXISTING HABITAT CONDITIONS 3

4. THREATENED AND ENDANGERED SPECIES 4

4.1 Action Area 4

4.2 Pre-field Review 4

4.3 Field Survey 4

4.4 State Listed Threatened and Endangered Species Potentially occurring in the Project Area 4

4.5 State Listed Threatened and Endangered Species Evaluated in Detail 6

4.6 Federally Listed Threatened and Endangered Species Potentially Occurring in the Project Area 7

4.7 Federally Listed Threatened and Endangered Species Evaluated in Detail 9

5. SUMMARY AND DETERMINATION OF EFFECTS 9

5.1 Direct and Indirect Effects to Federally Listed Species 9

5.2 Cumulative Effects 9

5.3 Determination of Effect 9

6. BIOLOGICAL ASSESSMENT PREPARERS 10

7. CONSULTATION AND COORDINATION 11

8. SELECTED BIBLIOGRAPHY 11

ATTACHMENTS

Attachment A - Figures

Attachment B – Design Drawings

Attachment C – Plants Occurring in the Project Area

1. INTRODUCTION

Ecosphere Environmental Services (Ecosphere) was contracted by Animas Environmental Services, LLC (Animas) on behalf of the City of Farmington, New Mexico to conduct a threatened and endangered species survey and prepare a biological assessment (BA) for the Porter Arroyo Detention Facility. The BA was prepared in support of permitting requirements of the Clean Water Act (CWA) of 1977 (33 U.S.C. §1251 et seq.) required by the proposed project.

Section 404 permitting requires compliance with the Endangered Species Act (ESA) of 1973, as amended, (16 U.S.C. 1531 et seq.). A BA is the means to review, analyze, and document the direct, indirect, and cumulative effects on U.S. Fish and Wildlife Service (USFWS) federally listed endangered, threatened, and/or candidate species and proposed or designated critical habitats thereof, as a result of proposed action.

Also considered in this BA are potential impacts to listed State of New Mexico threatened or endangered species identified under the authority of the New Mexico Wildlife Conservation Act (NMSA 17-2-37 through 17-2-46, 1978).

Implementation of the proposed action is expected to have no adverse effects to any State of New Mexico or federally listed threatened, endangered, or candidate species.

2. DESCRIPTION OF THE PROPOSED PROJECT

The proposed action would be located in San Juan County, New Mexico within the Farmington city limits. A vicinity map (1) is provided in Attachment A. The proposed project would be constructed within an approximate 40-acre parcel. The project area is shown on Figure 2 in Attachment A. The proposed project is located on the Farmington North, New Mexico U.S. Geological Survey (USGS) 7.5 minute quadrangle. The legal description of the proposed project is the SW ¼ Section 25, Township 30 North, Range 13 West, New Mexico Principal Meridian. Photographs of the project area are included in Attachment A.

The City of Farmington proposes to construct the Porter Arroyo Detention Facility. The detention facility would be a dam to control the storm water flow rate of the Porter Arroyo. Construction of the facility would remove the mapped Federal Emergency Management Agency (FEMA) Flood Zone designation from the downstream residential and commercial properties. The dam has been designed to detain the runoff generated by a 100-year storm within the Porter Arroyo drainage system. The drainage system has an approximate area of 1,500 acres and is roughly 3.5 miles in length from its upper basin limits on Hood Mesa to its outfall into the Animas River.

The detention facility would hold surface runoff and release it in a controlled manner over an approximately 27 hour time period to reduce the potential for flooding downstream.

Hydrology for the dam design was based on earlier studies performed by the U.S. Army Corps of Engineers (USACE). The hydrology was recently updated using recently compiled rainfall data and recent aerial

photography and contour mapping, which were ultimately used for sizing the reservoir volume and spillway capacity. The facility is planned for construction during the summer of 2011.

Below is a quantity/dimension summary chart from the construction plans:

THE OUTLET STRUCTURE FROM THE DETENTION POND IS LOCATED IN THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 25, TOWNSHIP 30 NORTH, RANGE 13 WEST, NEW MEXICO PRINCIPAL MERIDIAN, AT A POINT WHOSE STATE PLANE COORDINATES ARE:
X = 127,317.34, Y = 103,547.60, CENTRAL ZONE, N.A.D. 1927.

THE PORTER ARROYO DETENTION POND HAS THE FOLLOWING PROPERTIES:

HAZARD CLASSIFICATION	HIGH
MAXIMUM HEIGHT OF DIKE ABOVE FOUNDATION	23 FEET
LENGTH OF DIKE	650 FEET
MAXIMUM DIKE WIDTH AT BASE	135 FEET
CREST WIDTH	20 FEET
SLOPE UPSTREAM FACE	2.5:1
SLOPE DOWNSTREAM FACE	2.5:1
ELEVATION AT CREST OF DIKE	5654.9
ELEVATION AT EMERGENCY SPILLWAY CREST	5645.0
ELEVATION AT BOTTOM OPENING OF OUTLET STRUCTURE	5629.0
ELEVATION OF FLOWLINE OF OUTLET CONDUIT	5625.6
FREEBOARD	11.4 FEET
WIDTH OF EMERGENCY SPILLWAY	35 FEET
DISCHARGE CAPACITY OF EMERGENCY SPILLWAY	7690 CFS
OUTLET CONDUIT, TYPE AND SIZE	30" RCP
OUTLET CONDUIT, CAPACITY AT EMERGENCY SPILLWAY CREST	99 CFS
EVACUATION TIME	26.6 HOURS
DRAINAGE AREA	467 ACRES
STORAGE CAPACITY TO SPILLWAY CREST	25.9 AC–FT

The permanent and temporary disturbed areas within the surveyed high water mark limits are shown on design drawings in Attachment B.

2.1 Mitigation Measures

To minimize or eliminate the potential for sedimentation and hazardous materials, construction of the proposed action will adhere to the terms and conditions of the CWA 401 and 404 permits and will employ best management practices. These measures include, but are not limited to:

- The contractor will monitor all mitigation measures encompassing sedimentation and erosion-control measures to affirm that these measures are being followed correctly and are providing the appropriate protection to surrounding waters.
- Any heavy equipment used in the project area shall be cleaned prior to the start of the project and inspected daily for leaks. No leaking equipment may be used in or near surface water.
- Fuel, oil, hydraulic fluid and other substances of this nature shall not be stored within the limits of this project.

3. EXISTING HABITAT CONDITIONS

The proposed project is located within the Farmington city limits at the base of Hood Mesa approximately 2.4 miles north of the Animas River. The 40-acre parcel is bound on the south by Pinon Hills Boulevard, a four-lane paved road, and on the west and north by College Boulevard, a two-lane paved road. Piedra Vista High School is located immediately east. The surrounding area is moderately developed with education institutions, private residences, and a variety of business. Off road vehicle use of the area is common and has resulted in a number of two-track roads and trails within the parcel, refer to Figure 2 in Attachment A.

Two operational natural gas wells, the Panther #1 and Piedra Vista #1, are located on the same pad in the northeastern corner of the proposed project area. The pad is located on a sandstone outcrop approximately 20 feet above Porter Arroyo. Enterprise Products owns and operates a natural gas pipeline that parallels another pipeline owned and operated by Williams Four Corners that crosses through the central portion of the project area adjacent to Porter Arroyo. Immediately south of the well pad is a soil stock pile area. An overhead electric power line bisects the parcel from the northeast to the southwest. Power lines and street lights also occur along the western and southern parcel boundaries.

Elevation within the project area ranges from approximately 5,630 to 5,665 feet above mean sea level. Surficial geology in the project area is the Nacimiento Formation. Two major sandstone outcrops trend north to south within the project area as shown on Figure 2. Based on the NRCS soil survey for San Juan County, New Mexico (Keetch 1980), the proposed project area includes soil map units Stumble loamy sand 0 to 3 percent slopes and Farb-Persayo-Rock outcrop complex, moderately steep.

Porter Arroyo originates approximately 0.75 linear miles north of the project area and drains the southwestern portion of Hood Mesa into the Animas River, 2.4 miles south. Porter Arroyo crosses under College Boulevard through two large steel culverts encased in concrete and enters the northeastern corner of the project area. The ordinary high water mark (OHWM) of Porter Arroyo through the project area ranges from a maximum of 30 feet in width, commonly 20 feet in width in less disturbed areas and is less than 1 foot in depth.

An unnamed tributary flows into the project area from the northwestern corner and merges with the main channel approximately 750 feet south of the culvert system. This drainage has an OHWM of less than 6-inches deep by 2-feet wide. The second unnamed tributary crosses through the project area southwestern corner and converges with the main channel near the southern project area boundary. This drainage has an OHWM of less than 1 foot deep by 10-feet wide. Both unnamed tributaries flow under College Boulevard via 2 to 3-foot diameter culverts. The 40 acre project area does not contain any perennial water sources, springs, or seeps.

Porter Arroyo has a sandy channel that is frequently used for off road vehicles. Vegetation along the banks and undisturbed portions of the channel is composed big sagebrush (*Artemisia tridentata*), Indian ricegrass (*Achnatherum hymenoides*), rubber rabbitbrush (*Ericameria nauseosa*), sand sage (*Artemisia filifolia*) and Russian thistle (*Salsola iberica*). There are a few (less than five) individual scattered saltcedar (*Tamarix*

pentandra) throughout the project area. Vegetation within the majority of the project area exhibits an estimated cover of 10-40 percent. The remainder of the project area is vegetated with open canopy piñon-juniper (*Pinus edulis-Juniperus osteosperma*) woodland. The woodland understory is dominated by big sagebrush, antelope bitterbrush (*Purshia tridentata*) and Mormon tea (*Ephedra* sp.). Canopy cover was visually estimated at 20 percent. Understory cover ranged from 20-30 percent. A complete list of plants observed in the project area is provided as Attachment C.

Signs of wildlife within the project area were limited to desert cotton tail (Sylvilagus audubonii), fox (Vulpes sp.), piñon jay (Gymnorhinus cyanocephalus), and domestic dog (Canine familaris).

4. THREATENED AND ENDANGERED SPECIES

4.1 Action Area

The action area for the purposes of this analysis is defined as the proposed project area and a 1-mile buffer around the area. There is no designated critical habitat for any federally listed species within the action area.

4.2 Pre-field Review

The State of New Mexico has 13 species listed as threatened or endangered with the potential to occur in San Juan County. According to the USFWS, there are 11 federally listed threatened, endangered, or candidate plant and animal species with potential to occur in San Juan County, New Mexico

4.3 Field Survey

Joey Herring and Theresa Ancell of Ecosphere conducted an on-site pedestrian survey of the proposed project area on November 16, 2010. The survey consisted of zig-zag transects at 20-foot intervals within the 40-acre project area. The weather was sunny with ambient temperatures around 65º F. All plant and wildlife species, and wildlife signs observed in the area were recorded and digital photos of the project area were taken. Binoculars were used to survey for raptors and potential habitat. The habitat was evaluated for all USFWS and State of New Mexico species with special conservation status that occur or have the potential to occur in the project area or action area (Tables 1 and 2).

4.4 State Listed Threatened and Endangered Species Potentially occurring in the Project Area

Thirteen New Mexico State endangered or threatened species are listed with the potential to occur in San Juan County, New Mexico. A list of these species, their habitat associations and a description of the potential for each to occur in the proposed project area is provided in Table 1.

Table 1. State of New Mexico Listed Threatened (T) or Endangered (E) with Potential to Occur in San Juan County.

SPECIES	CONSERVATION STATUS	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN THE PROJECT OR ACTION AREA
BIRDS			
Brown pelican *(Pelecanus occidentalis carolinensis*)	E	Found in coastal marine and estuarine habitats year-round. Rare inland but regularly visits inland waters of the southwest post-breeding.	No marine habitats or perennial waters within the project or action area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Breeds in dense, shrubby riparian habitats, usually in close proximity to surface water or saturated soil.	No potential habitat in project or action area due to a lack of riparian areas.
Bald eagle (*Haliaeetus leucocephalus*)	T	Nests in forested areas adjacent to large bodies of water.	No perennial water sources in the action area. Construction would occur outside of the period when wintering bald eagles could be in the area.
Gray vireo *(Vireo vicinior)*	T	Inhabits mixed piñon-juniper and oak scrub communities and arid chaparral in hot climates.	Piñon-juniper woodland in the project and action area is not extensive in patch size to be considered suitable.
FISH			
Colorado pikeminnow (*Ptychocheilus lucius*)	E	Large rivers with strong currents, deep pools, and quiet backwaters.	No perennial water resources exist within the project or action area. Not known to occur in Navajo Reservoir.
Roundtail chub (*Gila robusta*)	E	Deep pools and eddies in mid- to large-sized rivers and streams throughout the Colorado River Basin.	No perennial water resources exist within the project or action area. Not known to occur in Navajo Reservoir.
Mexican tetra (*Astyanax mexicanus*)	T	Shallow streams and rivers with gravel bottoms. Primarily in habitats with warm spring flows in New Mexico.	No perennial water resources exist within the project or action area. Not known to occur in Navajo Reservoir.

SPECIES	CONSERVATION STATUS	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN THE PROJECT OR ACTION AREA
PLANTS			
Brack's hardwall cactus (*Sclerocactus cloveriae* ssp. *brackii*)	E	Sandy clay of the Nacimiento Formation in sparse shadscale scrub (5,000-6,000 ft).	Soils in the project area are sandy in nature and shallow. No suitable habitat occurs within the project area.
Aztec gilia (*Aliciella formosa*)	E	Salt desert scrub communities in soils of the Nacimiento Formation (5,000-6,000 ft).	Soils in the project area are sandy in nature and shallow. No suitable habitat occurs within the project area.
Gooding's onion (*Allium gooddingii*)	E	Associated with perennial, intermittent, and ephemeral stream courses in mixed-conifer and spruce-fir zones (7,000-9,400 ft).	No perennial water sources, mixed conifer or spruce-fir in the project or action area.
Mesa Verde cactus (*Sclerocactus mesae-verdae*)	E	Highly alkaline soils in sparse shale or adobe clay badlands of the Mancos and Fruitland formations (4,000-5,550 ft).	Project and action areas do not contain appropriate geologic substrate for this species.
Parish's alkali grass (*Puccinellia parishii*)	E	Great Basin Desert and Chihuahuan Desert Scrub communities in alkaline springs, seeps, and seasonally wet areas at heads of drainages or on gentle slopes (2,600-7,200 ft).	No springs, seeps, or seasonally wet areas are located in the project or action area.
Zuni fleabane (*Erigeron rhizomatus*)	E	Nearly barren detrital clay hillsides with soils derived from shales of the Chinle or Baca formations (often seleniferous); in open piñon-juniper woodlands at (7,300-8,000 ft).	No soils derived from the Chinle or Baca formations within the project or action area.

Source: NMNHP and BISON 2011

4.5 State Listed Threatened and Endangered Species Evaluated in Detail

The project area does not contain potential habitat for any state threatened or endangered species listed for San Juan County.

4.6 Federally Listed Threatened and Endangered Species Potentially Occurring in the Project Area

Eleven federally listed threatened, endangered or candidate species have the potential to occur in San Juan County. A list of these species, their habitat associations and a description of the potential for each to occur in the proposed project area is provided in Table 2. No federally listed species, or habitats thereof, were identified during the on-site field survey.

Table 2. Species listed by the U.S. Fish and Wildlife Service (USFWS) as threatened (T), endangered (E), or candidate (C) with the potential to occur in San Juan County, New Mexico.

SPECIES	CONSERVATION STATUS	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN THE PROJECT OR ACTION AREA
MAMMALS			
Black-footed ferret (*Mustela nigripes*)	E	Open grasslands with year-round prairie dog colonies of 200 acres or greater.	No prairie dog colonies were identified in the project or action area.
Canada lynx (*Lynx canadensis*)	C	Generally occurs in boreal and montane forests dominated by coniferous or mixed forest with thick undergrowth.	No boreal or montane forests in project or action area.
BIRDS			
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E	Breeds in dense, shrubby riparian habitats, usually in close proximity to surface water or saturated soil.	No riparian habitat exists in the project or action area.
Mexican spotted owl (*Strix occidentalis lucida*)	T	Nests in caves, cliffs, or trees in steep-walled canyons of mixed conifer forests.	No mixed conifer forests or designated critical habitat occurs in the project or action area.
Yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	C	Breeds in riparian woodlands with dense, understory vegetation.	No riparian habitat exists in the project or action area.

SPECIES	CONSERVATION STATUS	HABITAT ASSOCIATIONS	POTENTIAL TO OCCUR IN THE PROJECT OR ACTION AREA
FISH			
Colorado pikeminnow (*Ptychocheilus lucius*)	E	Large rivers with strong currents, deep pools, and quiet backwaters.	No perennial water sources occur in the action area.
Razorback sucker (*Xyrauchen texanus*)	E	Medium to large rivers with silty to rocky substrates. Prefers strong currents and deep pools.	No perennial water sources occur in the action area.
Roundtail chub (*Gila robusta*)	C	Large rivers. Present in low numbers in the San Juan, Mancos, La Plata, and Animas rivers in Colorado and New Mexico.	No perennial water sources occur in the action area
PLANTS			
Knowlton's cactus (*Pediocactus knowltonii*)	E	Alluvial deposits that form rolling, gravelly hills in piñon-juniper and sagebrush communities (6,200-6,400 ft). A type locality of the Los Piños River area.	No suitable habitat occurs in the project or action area. No rolling gravelly hills or river terraces occur in the project or action area.
Mancos milkvetch (*Astragalus humillimus*)	E	Cracks of Point Lookout Sandstone of the Mesa Verde series (5,000-6,000 ft).	Project and action area do not contain appropriate geologic substrate for this species.
Mesa Verde cactus (*Sclerocactus mesae-verdae*)	T	Highly alkaline soils in sparse shale or adobe clay badlands of the Mancos and Fruitland Formations (4,000-5,550 ft).	Project and action area do not contain appropriate geologic substrate for this species.

Source: USFWS 2011

4.7 Federally Listed Threatened and Endangered Species Evaluated in Detail

The action area does not contain any potential habitat for federally listed species with the potential to occur in San Juan County.

5. SUMMARY AND DETERMINATION OF EFFECTS

5.1 Direct and Indirect Effects to Federally Listed Species

No direct or indirect effects to any federally listed species with the potential to occur in San Juan County are expected to occur from implementation of the proposed action. No direct or indirect effects to designated critical habitat are expected to occur.

5.2 Cumulative Effects

The proposed action would not result in any cumulative effects to any federally listed species, or designated critical habitat.

5.3 Determination of Effect

There would be no effects to any State of New Mexico listed threatened or endangered species from the proposed action. Table 3 summarizes the effects to state listed threatened or endangered species.

Table 3. Summary of the Analysis of Effect on State Listed Species

SPECIES	STATUS	DETERMINATION OF EFFECT
Brown pelican	Endangered	No Impact
Southwestern willow flycatcher	Endangered	No Impact
Bald eagle	Threatened	No Impact
Gray vireo	Threatened	No Impact
Colorado pikeminnow	Endangered	No Impact
Roundtail chub	Endangered	No Impact
Mexican tetra	Threatened	No Impact
Brack's hardwall cactus	Endangered	No Impact
Aztec gilia	Endangered	No Impact
Goodding's onion	Endangered	No Impact

SPECIES	STATUS	DETERMINATION OF EFFECT
Mesa Verde cactus	Endangered	No Impact
Parish's alkali grass	Endangered	No Impact
Zuni fleabane	Endangered	No Impact

There would be no effects to any federally listed threatened, endangered, or candidate species from the proposed action. Table 4 summarizes the effects of the proposed action on federally listed threatened, endangered, and candidate species.

Table 4. Summary of the Analysis of Effect on Federally Listed Species

SPECIES	STATUS	DETERMINATION OF EFFECT
Black-footed ferret	Endangered	No Effect
Canada lynx	Candidate	No Effect
Southwestern willow flycatcher	Endangered	No Effect
Mexican spotted owl	Threatened	No Effect
Yellow-billed Cuckoo	Candidate	No Effect
Colorado pikeminnow	Endangered	No Effect
Colorado pikeminnow critical habitat		No Effect
Razorback sucker	Endangered	No Effect
Razorback sucker critical habitat		No Effect
Roundtail chub	Candidate	No Effect
Knowlton's cactus	Endangered	No Effect
Mancos milkvetch	Endangered	No Effect
Mesa Verde cactus	Threatened	No Effect

6. BIOLOGICAL ASSESSMENT PREPARERS

Ecosphere Environmental Services
4801 N. Butler Ave. Suite 15101
Farmington, NM 87401
(505) 327-3088

Joey Herring, Biologist/Project Manager BS – Environmental Biology

Theresa Ancell, Biologist BS – Biology

7. CONSULTATION AND COORDINATION

Blaine Watson
Animas Environmental Services
Farmington, New Mexico

Chris Wrbas
US Army Corps of Engineers
Durango, Colorado

Nica Westerling
City of Farmington,
Farmington, New Mexico

8. SELECTED BIBLIOGRAPHY

Buehler, D. A. 2000. Bald Eagle (*Haliaeetus leucocephalus*). *In* The Birds of North America, No. 506 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Bureau of Land Management (BLM). 1998. Endangered, threatened and sensitive plant field guide. Bureau of Land Management Albuquerque, and Ecosphere Environmental Services, Farmington.

Cronquist, A., A.H. Holmgren, N.H. Holmgren and J.L. Reveal. 1972. Plant Geography of the Intermountain Region. Pp. 77-161 in *Intermountain Plant*, vol. 1, Hafner Pub. Co., New York.

Ecosphere Environmental Services. 1995. The Farmington District endangered, threatened and sensitive plant field guide. Bureau of Land Management, Farmington, NM.

Ehrlich, P. R., D. S. Dobkin, and D. Wheye. 1988. The birder's handbook. Simon & Schuster Inc., New York, NY.

Fisher, C., D. Pattie, and T. Hartson. 2000. Mammals of the Rocky Mountains. Lone Pine Publishing, Vancouver, BC.

Heil, K. D. and J.M Porter. 1994. *Sclerocactus* (Cactaceae): a revision. Haseltonia 2: 20-46.

Hughes, J. M. 1999. Yellow-billed Cuckoo (*Coccyzus americanus*). *In* The Birds of North America, No. 418 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Kochert, M. N., K. Steenhoff, C. L. McIntyre, and E. H. Craig. 2002. Golden Eagle (*Aquila chrysaetos*). *In* The Birds of North America, No. 684 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Natural Heritage New Mexico (NHNM). 2011. Natural heritage New Mexico database. Natural Heritage New Mexico, University of New Mexico Biology Department, Albuquerque, NM. Available at **http://nmnhp.unm.edu/query_bcd/query.html**.

New Mexico Rare Plant Technical Council. 1999. New Mexico Rare Plants. Albuquerque, NM: New Mexico Rare Plants Home Page. http://nmrareplants.unm.edu (Version 2006).

Page, L. M. and B. M. Burr. 1991. A field guide to freshwater fishes. Houghton Mifflin Company, Boston, MA

Rees, David E., Jonathan A. Ptacek, and William J. Miller. 2005. Roundtail Chub (*Gila robusta robusta*): A Technical Conservation Assessment. Prepared for the USDA Forest Service, Rocky Mountain Region. Miller Ecological Consultants, Inc. Fort Collins, Colorado 80525-1275.

Keetch, C.W. 1980. Soil Survey of San Juan County, New Mexico - Eastern Part. U.S. Department of Agriculture, Soil Conservation Service in Cooperation with the U.S. Department of the Interior, Bureau of Indian Affairs and Bureau of Reclamation and the New Mexico Agricultural Experiment Station.

USDI. Fish and Wildlife Service. 1995. Recovery plan for the Mexican spotted owl: Vol. I. Albuquerque, New Mexico. 172 pp.

USDI. Fish and Wildlife Service. 1998. Black-footed ferret (*Mustela nigripes*) fact sheet. **http://endangered.fws.gov/i/A07.html**.

USDI Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher recovery plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O.

USDI Fish and Wildlife Service (USFWS) .W.S. 2006. **http://ifw2es.fws.gov/Endangered Species**/lists/ListSpecies.cfm.

U.S. Fish and Wildlife Service (USFWS) 2002a. Colorado pikeminnow (*Ptychocheilus lucius)* Recovery Goal: amendment and supplement to the Colorado Squawfish Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

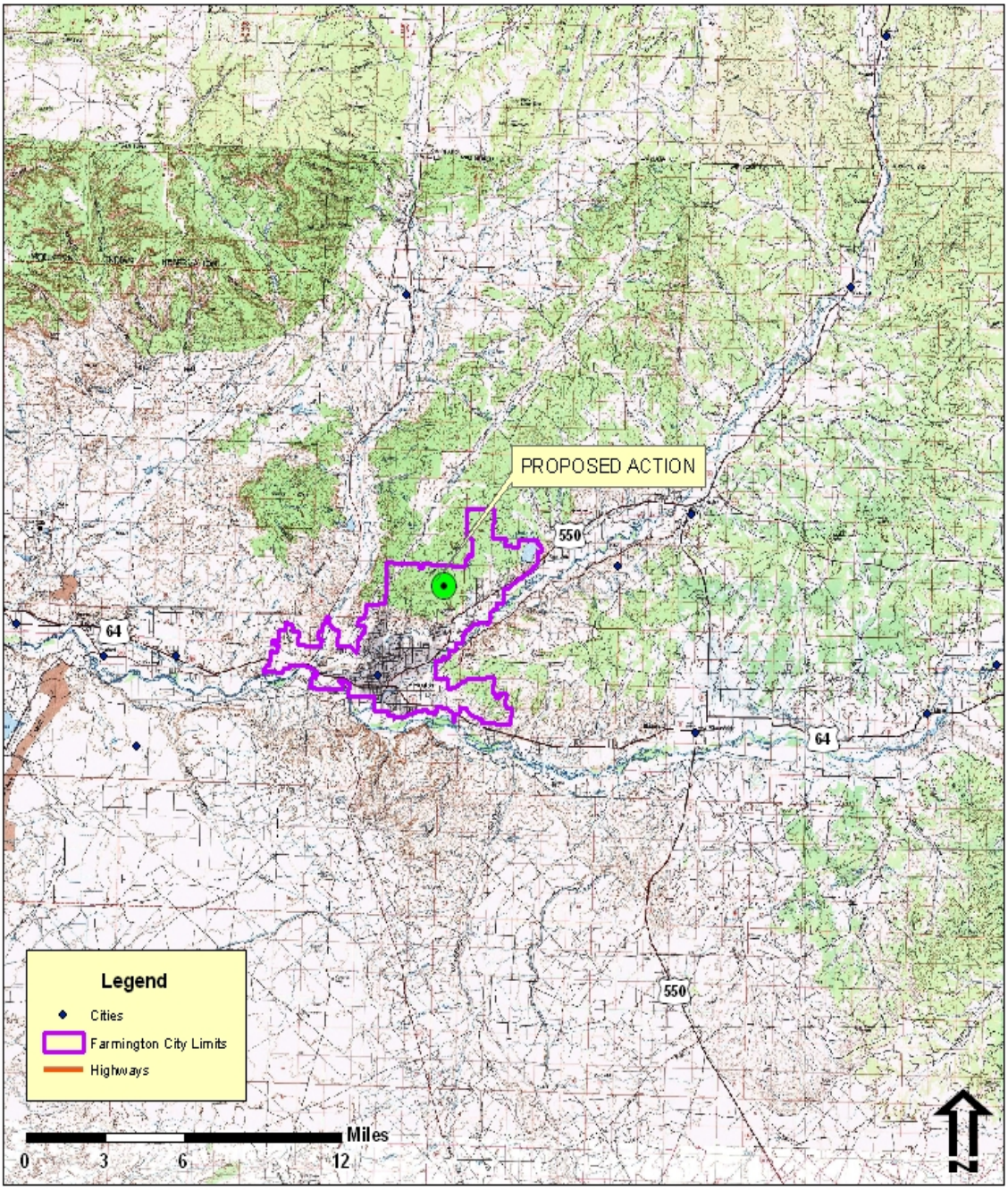
U.S. Fish and Wildlife Service (USFWS) 2002b. Razorback sucker (Xyrauchen texanus) Recovery Goals: amendment and supplement to the Razorback Sucker Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

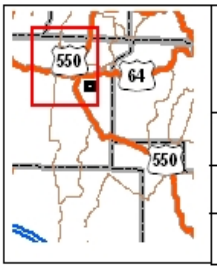
Ward, A. W. 1990. Geologic Map Emphasizing the Surficial Deposits of the Farmington 30' X 60' Quadrangle, New Mexico and Colorado. Department of the Interior, U. S. Geological survey Miscellaneous Investigation Series, MAP I-1978. U.S. Geological Survey Map Distribution Center, Box 25286, Federal Center, Denver, Colorado 80225

Wheeler, Brian K. 2003. Raptors of Western North America. Princeton University Press. Princeton, NJ.

ATTACHMENT A

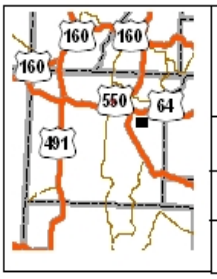
FIGURES





CITY OF FARMINGTON PORTER ARROYO DETENTION FACILITY	
TOWNSHIP 30 NORTH RANGE 13 WEST SECTION 25	FIGURE 1
SAN JUAN COUNTY, NEW MEXICO	VICINITY MAP
	5/24/11

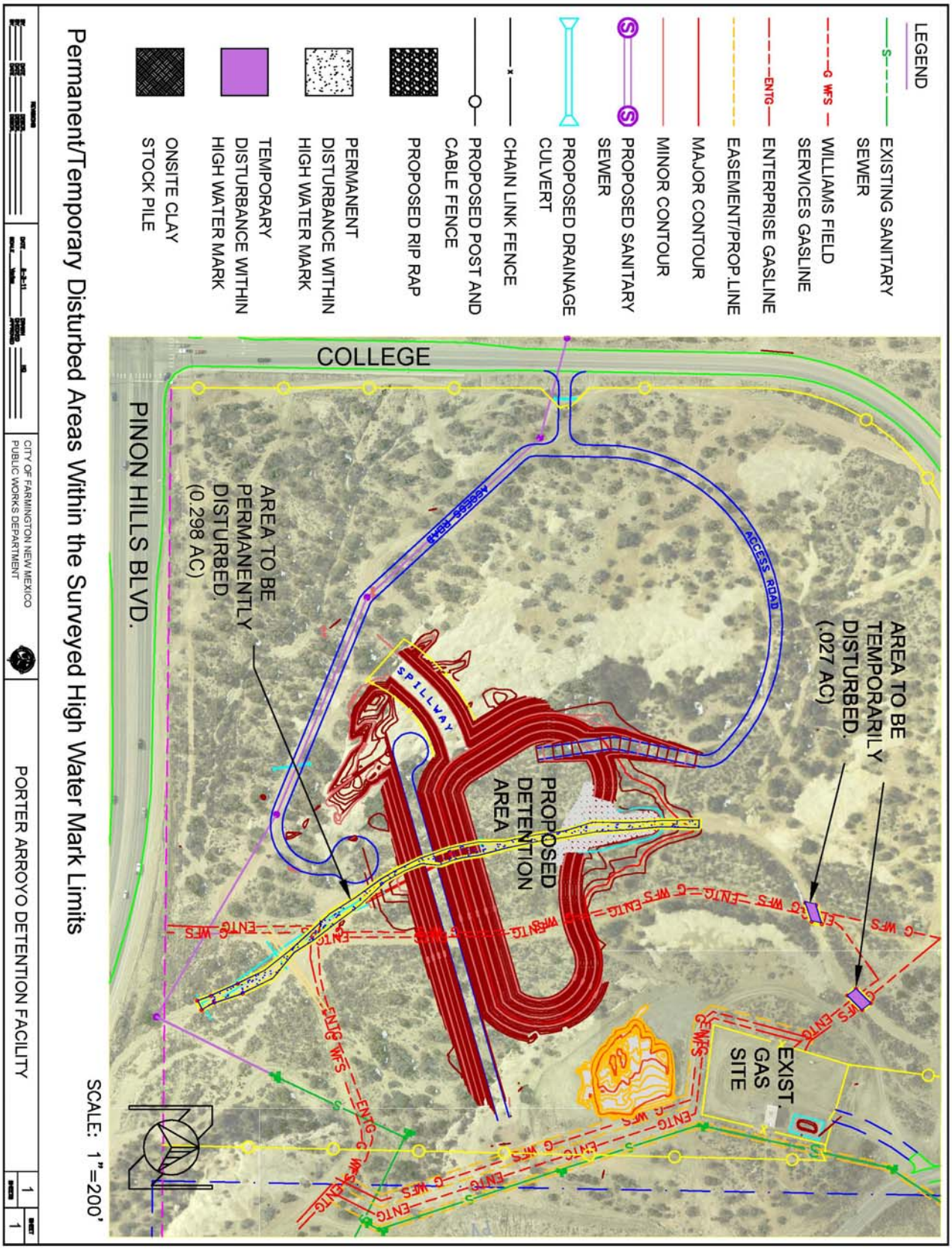
Ecosphere Environmental Services



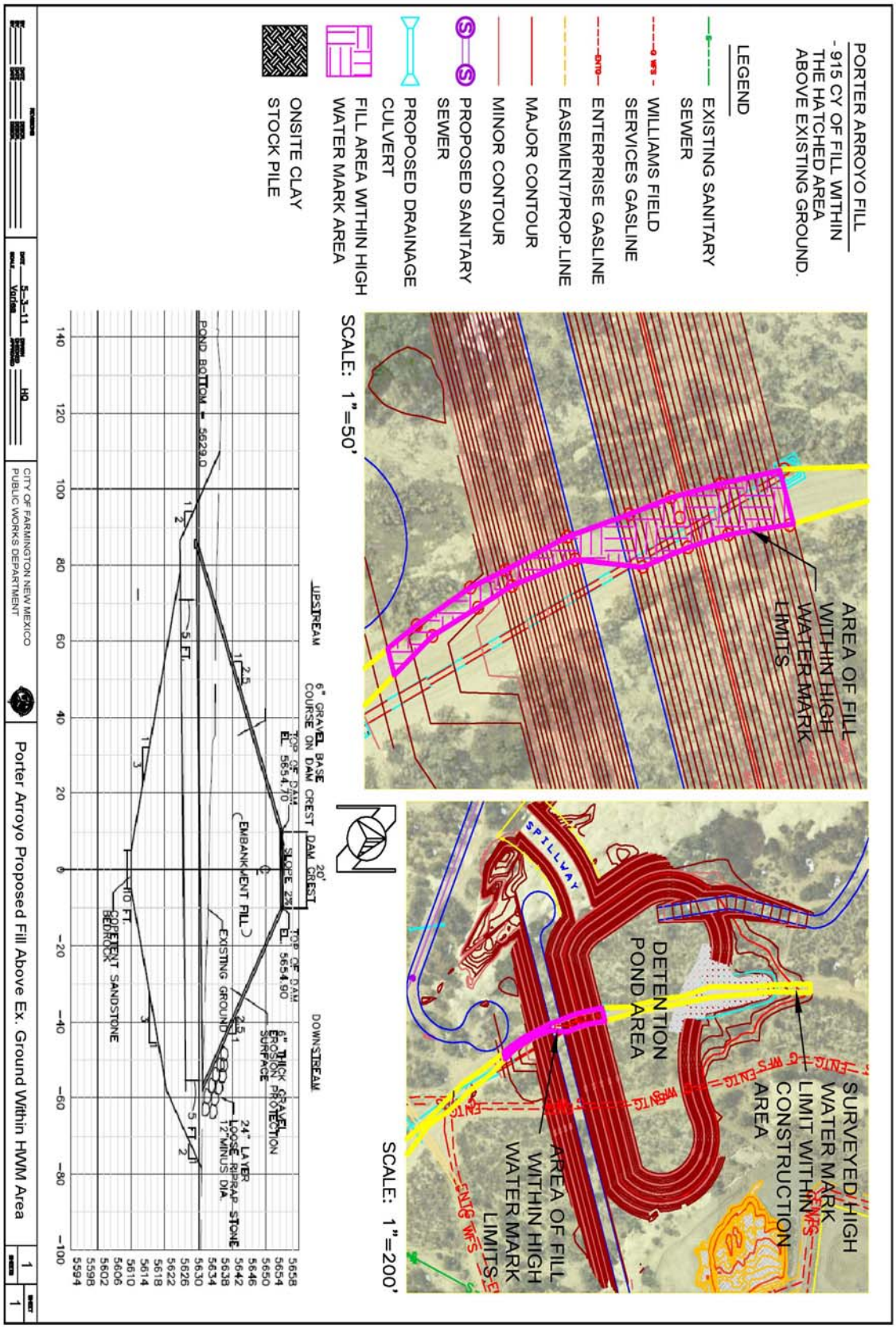
CITY OF FARMINGTON PORTER ARROYO DETENTION FACILITY		Ecosphere Environmental Services
TOWNSHIP 30 NORTH RANGE 13 WEST SECTION 25	FIGURE 2	
FARMINGTON NORTH, NM 7.5-MINUTE	PROJECT AREA MAP	
SAN JUAN COUNTY, NEW MEXICO	5/24/11	

Attachment B

Design Drawings



Permanent/Temporary Disturbed Areas Within the Surveyed High Water Mark Limits


PORTER ARROYO FILL
- 915 CY OF FILL WITHIN THE HATCHED AREA ABOVE EXISTING GROUND.
LEGEND
EXISTING SANITARY SEWER
WILLIAMS FIELD SERVICES GASLINE
ENTERPRISE GASLINE
EASEMENT/PROP.LINE
MAJOR CONTOUR
MINOR CONTOUR
PROPOSED SANITARY SEWER
PROPOSED DRAINAGE CULVERT
FILL AREA WITHIN HIGH WATER MARK AREA
ONSITE CLAY STOCK PILE
AREA OF FILL WITHIN HIGH WATER MARK LIMITS
SCALE: 1"=50'
SURVEYED HIGH WATER MARK
LIMIT WITHIN CONSTRUCTION AREA
DETENTION POND AREA
AREA OF FILL WITHIN HIGH WATER MARK LIMITS
SPILLWAY
SCALE: 1"=200'
UPSTREAM
DOWNSTREAM
6" GRAVEL BASE COURSE ON DAM CREST
20' DAM CREST
TOP OF DAM EL 5654.70
TOP OF DAM EL 5654.90
SLOPE 2%
EMBANKMENT FILL
EXISTING GROUND
6" THICK GRAVEL EROSION PROTECTION SURFACE
24" LAYER LOOSE RIPRAP STONE 12" MINUS DIA.
POND BOTTOM - 5629.0
5 FT.
10 FT.
COARSE SANDSTONE BEDROCK
5658
5654
5650
5646
5642
5638
5634
5630
5626
5622
5618
5614
5610
5606
5602
5598
5594
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
CITY OF FARMINGTON NEW MEXICO
PUBLIC WORKS DEPARTMENT
Porter Arroyo Proposed Fill Above Ex. Ground Within HWM Area

Attachment C

Plants Occurring in the Project Area

PLANTS OCCURRING IN THE PROJECT AREA

Forbs

Amaranthus graecizans	Pigweed
Amaranthus retroflexus	Green pigweed
Ambrosia acanthicarpa	Bur ragweed
Astragalus mollissimus	Milkvetch
Brickellia californica	Brickel-bush
Brickellia grandiflora	Brickel-bush
Chenopodium sp.	Chenopodium
Cordylanthus wrightii	Bird's beak
Crepis occidentalis	Hawksbeard
Cryptantha sp.	Cryptantha
Descurainia sp.	Tansy mustard
Eriogonum cernuum	Nodding buckwheat
Eriogonum jamesii	Wild buckwheat
Eriogonum leptophyllum	Slenderleaf buckwheat
Eriogonum racemosum	Redroot buckwheat
Erodium cicutarium	Filare
Gilia aggregata	Gilia
Gilia longiflora	Gilia
Halogeton glomeratus	Halogeton
Helianthus annuus	Sunflower
Heterotheca villosa	Goldenaster
Hymenopappus filifolius	Hymenopappus
Hymenoxys acaulis	Actinea
Leucelene ericoides	Roseheath
Machaerantha canescens	Purple aster
Malva neglecta	Cheeseweed
Mentzelia albicaulis	Stickleaf, blazing star
Mirabilis multiflora	Colorado four-o'clock
Oenothera sp.	Evening primrose
Penstemon sp.	Penstemon
Plantago patigonica	Plantain
Polygonum aviculare	Knotweed
Rumex hymenosepalus	Wild rhubarb
Salsola iberica	Russian thistle, tumbleweed
Senecio multilobatus	Groundsel
Senecio spartoides	Broom groundsel
Sisymbrium altissimum	Tumble mustard
Sphaeralcea coccinea	Globe mallow

Stanleya pinnata	Prince's plume
Tribulus terrestris	Goathead

Grasses

Achnatherum hymenoides	Indian ricegrass
Agropyron cristatum	Crested wheat
Aristida purpurea	Red three-awn
Bouteloua barbata	Sixweeks grama
Bouteloua gracilis	Blue grama
Bromus tectorum	Cheatgrass
Chloris verticillata	Windmill grass
Chloris virgata	Feather finger grass
Elymoides elymoides	Squirrel-tail grass
Festuca octoflora	Sixweeks fescue
Hesperostipa comata	Needle and thread
Munroa squarrosa	False buffalo grass
Plueraphis jamesii	Galleta
Setaria verticillata	Bristly foxtail
Sporobolus airoides	Alkali sacaton

Shrubs

Artemisia campestris	Field wormwood
Artemisia filifolia	Sage
Artemisia tridentata	Big sagebrush
Atriplex canescens	Four winged saltbush
Ephedra torreyana	Mormon tea
Ephedra viridis	Mormon tea
Ericameria nauseosa	Rubber rabbitbrush
Gutierrezia sarothrae	Broom snakeweed
Lycium pallidum	Pale desert-thorn
Purshia tridentata	Antelope bitterbrush
Quercus turbinella	Live oak
Rhus trilobata var. *aromatica*	Skunkbrush
Tamarix pentandra	Saltcedar

Trees

Pinus edulis	Pinon

Juniperus osteosperma	Utah juniper

Cacti

Coryphantha vivipera	Pincushion cactus
Opuntia polyacantha	Prickly pear cactus
Opuntia whipplei	Rat-tail cholla
Yucca angustissima	Soapweed
Yucca baccata	Spanish bayonet