

GOODSPRINGS TRAILS STUDY

CLARK COUNTY NEVADA



Findings Report #3 | July 31, 2009

Planning Team:

*Lead Consultant/
Planning and Landscape Architecture:*



Shapins Belt Collins

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Introduction

The Goodsprings Trail Study began with field work, research and analysis, and a public meeting in the early winter of 2008. The culmination of these efforts was a set of analysis maps and a preliminary set of draft alternative trail alignments – Draft I Alignment Alternatives. In February 2009, these preliminary alternatives were distributed to a number of different stakeholders for review and comment. During this period, the planning team also contacted several other organizations and entities about specific issues which had been identified during the research and analysis phase of the trail study. Following the synthesis of all stakeholder comments and the results of the interim site visit (February 2009) and subsequent research, the planning team refined the preliminary alternatives and produced a second set of alternative alignments – Draft II Alignment Alternatives. The issues that the Draft II Alignment Alternatives responded to and outstanding issues that may impact the feasibility of the trail development in the Goodsprings area are outlined in Findings Report #1 (March 2009). This report (which includes Analysis Maps and the Draft I & II Alignment Alternatives) was made available to the public on the project website at www.shapins.com/goodsprings.



View overlooking the Town of Goodsprings from the Bird Spring Mountains.

The Draft II Alignment Alternatives were presented to the public in May 2009. Also presented at this time were several other illustrative displays including details of possible trailhead layouts, signage and surfacing options, and several perspectives. At that time, the planning team asked for input from the public and other stakeholder groups on the details of the preferred trail alignment such as trail location, usage, and amenities. Findings Report #2 was completed in June 2009 and contained a summary of public comments received to date, the Draft I Preferred Trail Alignment, and the Draft Environmental Issues and Constraints Summary completed by BEC. This document was made available for stakeholder review and comment in June.

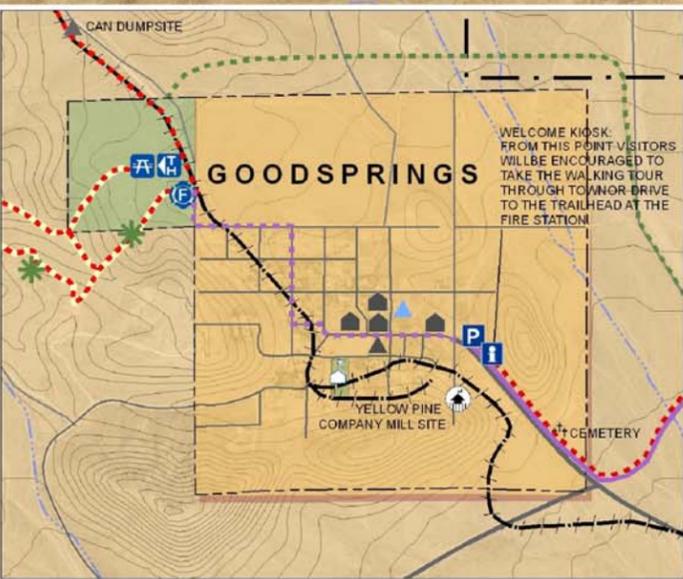
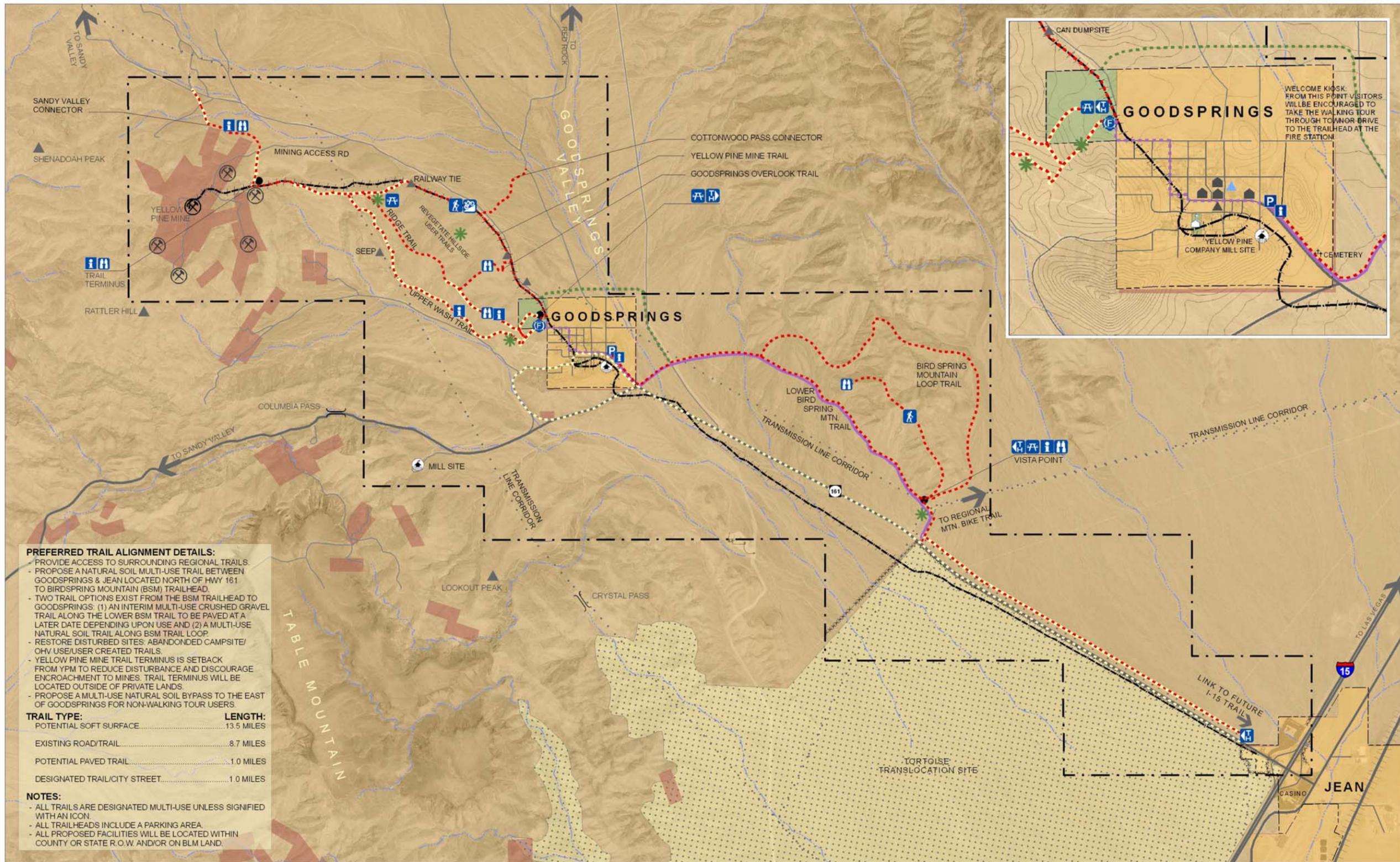
The Draft II Preferred trail Alignment was developed by the planning team after careful review and consideration of the following:

- Input received from stakeholders (as outlined in Findings Report # 1 and following stakeholder review of Findings Report #2).
- Public comments received via two public meetings, emails to planning team, and the project website (as outlined in Findings Report #2).
- Final Environmental Issues and Constraints Summary (Completed by BEC).
- Hydrology Report (Completed by Nevada By Design)

This third and final Findings Report contains the Draft II Preferred Trail Alignment Map (**Appendix 1**), the Final Environmental Issues and Constraints Summary (**Appendix 2**) and the Hydrology Report (**Appendix 3**).

APPENDIX 1

DRAFT II PREFERRED TRAIL ALIGNMENT MAP



PREFERRED TRAIL ALIGNMENT DETAILS:

- PROVIDE ACCESS TO SURROUNDING REGIONAL TRAILS.
- PROPOSE A NATURAL SOIL MULTI-USE TRAIL BETWEEN GOODSPRINGS & JEAN LOCATED NORTH OF HWY 161 TO BIRDSRING MOUNTAIN (BSM) TRAILHEAD.
- TWO TRAIL OPTIONS EXIST FROM THE BSM TRAILHEAD TO GOODSPRINGS: (1) AN INTERIM MULTI-USE CRUSHED GRAVEL TRAIL ALONG THE LOWER BSM TRAIL TO BE PAVED AT A LATER DATE DEPENDING UPON USE AND (2) A MULTI-USE NATURAL SOIL TRAIL ALONG BSM TRAIL LOOP.
- RESTORE DISTURBED SITES: ABANDONED CAMPSITE/ OHV USE/USER CREATED TRAILS.
- YELLOW PINE MINE TRAIL TERMINUS IS SETBACK FROM YPM TO REDUCE DISTURBANCE AND DISCOURAGE ENCROACHMENT TO MINES. TRAIL TERMINUS WILL BE LOCATED OUTSIDE OF PRIVATE LANDS.
- PROPOSE A MULTI-USE NATURAL SOIL BYPASS TO THE EAST OF GOODSPRINGS FOR NON-WALKING TOUR USERS.

TRAIL TYPE:	LENGTH:
POTENTIAL SOFT SURFACE	13.5 MILES
EXISTING ROAD/TRAIL	8.7 MILES
POTENTIAL PAVED TRAIL	1.0 MILES
DESIGNATED TRAIL/CITY STREET	1.0 MILES

- NOTES:**
- ALL TRAILS ARE DESIGNATED MULTI-USE UNLESS SIGNIFIED WITH AN ICON.
 - ALL TRAILHEADS INCLUDE A PARKING AREA.
 - ALL PROPOSED FACILITIES WILL BE LOCATED WITHIN COUNTY OR STATE R.O.W. AND/OR ON BLM LAND.

LEGEND	
--- STUDY AREA	REGIONAL TRAIL
--- CITY BOUNDARY	WASH
--- STATE ROAD	TRANSMISSION LINE CORRIDOR
--- COUNTY ROAD	TORTOISE BOUNDARY
--- HISTORIC YELLOW PINE RAIL CORRIDOR	PARKS AND SCHOOLS
CITY OF GOODSPRINGS AND JEAN	PRIVATE INHOLDING
BUREAU OF LAND MANAGEMENT	MINE
MILL SITE	PASS
POINT OF INTEREST	SPRING
RESTORATION / REVEGETATION	MOUNTAIN BIKING TRAIL
INTERPRETIVE AREA	PICNIC
PARKING	HIKING TRAIL
SCHOOL	VIEW
EQUESTRIAN BYPASS	POTENTIAL TRAILHEAD
BUILDING OF SIGNIFICANCE	POTENTIAL PAVED TRAIL (MULTI-USE)
POTENTIAL NATURAL SURFACE TRAIL	POTENTIAL TRAIL ADHERING TO EXISTING ROAD OR TRAIL
EXISTING ROAD BICYCLE LOOP	TORTOISE FENCE
TRAIL ALONG CITY STREET	

DRAFT II



APPENDIX 2

BEC ENVIRONMENTAL: ENVIRONMENTAL ISSUES & CONSTRIANTS SUMMARY

July 16, 2009

Ms. Emily Patterson, ASLA
Shapins Belt Collins
1818 16th Street
Boulder CO 80302

Project No. 020.08.001

RE: Environmental Issues and Constraints Summary for Goodsprings Trail Study

Dear Ms. Patterson:

BEC Environmental, Inc. (BEC) is pleased to report their findings in this Environmental Issues and Constraints Summary for the Goodsprings Trail Study Project. A review of the environmental and cultural resources encompassed in this Project and an overview of potential challenges to developing the Project is detailed below. However, this report does not serve as a substitute for a comprehensive Environmental Assessment or National Environmental Policy Act (NEPA) evaluation. A NEPA review for this area will be required after submitting a right of way application to the U.S. Bureau of Land Management (BLM) since the Project is located outside the established Las Vegas Valley land disposal boundary (BLM, 2004).

The area being considered for the proposed Goodsprings Trail is located in southern Clark County and is comprised of the 21 sections listed in Table 1. This area consists of 13440 acres (approximately 5439 hectares) and includes the Town of Goodsprings and areas adjacent to Goodsprings. Land located on both sides of the existing State Route 161 connecting the towns of Goodsprings and Jean is also included. Collectively, this area is hereinafter referred to as the Study Area.

Table 1. Study Area Boundaries

Township	Range	Sections
24 South	58 East	14-17, 20-23, 25-27, 34-36
24 South	59 East	31-32
25 South	59 East	3-5, 10-11

Land Management

The Study Area consists predominantly of BLM managed lands. Several areas of patented mining claims are contained within the Study Area, mainly northwest of Goodsprings. These claims, placed before 1955, are treated as private property, with the mine owner having the deed to the land. These now inactive mines produced copper, zinc ore, lead, gold and uranium.

Land Use

The existing Kern River natural gas pipeline runs north-south through the Study Area, east of Goodsprings.

Between Jean and Goodsprings, there are two designated future multiple use corridors located in portions of the Study Area. North of State Route 161 is the West-wide Energy Corridor Final Programmatic EIS Utility Corridor. This corridor has been surveyed for oil, gas and hydrogen pipelines and electricity transmission and distribution facilities. South of State Route 161 is the BLM Resource Management Plan (RMP) Designated Utility Corridor which follows an existing power line. The two corridors cross northwest of Goodsprings, paralleling one another until reaching Pahrump, Nevada.

Jean is part of the Jean/Roach Dry Lakes Special Recreation Management Area, designated and managed by the BLM, which allows for multiple recreational uses including off-highway vehicle activity on existing roads, trails, and dry washes and lake beds.

Biological Resources

The Nevada Natural Heritage Program and the BLM have compiled a detailed list of the biological resources, flora and fauna, that exist in the Study Area.

A records request for all special status species¹ within the boundary of the Study Area defined in Table 1 was requested from the Nevada Natural Heritage Program (NNHP). The NNHP is coordinated by the Nevada Department of Conservation and Natural Resources. Copies of the data request form and the response from the NNHP dated January 12, 2009, have been provided in the Supporting Documents Section. Permission to publish this data publically has also been provided by NNHP.

Table 2 details the sensitive species that were identified by the NNHP as occurring within the Study Area. In addition, Table 2 includes occurrences of the yellow twotone beardtongue (*Penstemon bicolor* ssp. *bicolor*), rosy twotone beardtongue (*Penstemon bicolor* ssp. *roseus*) and Spring Mountains milkvetch (*Astragalus remotus*) that have been observed within one kilometer of the Study Area boundary. This information, provided by NNHP, is significant because *Penstemon* and *Astragalus* are transient species, meaning that the plants may be observed in an area one year and due to transport by wind or water, may establish in adjacent areas the following year.

According to the BLM RMP, the habitat type for the Study Area is characterized as Mojave Desert shrub with limited sections designated as a southern desert shrub zone (BLM RMP defined criteria). These zones receive two to eight inches of rain a year, typically during summer thunderstorms. Zone vegetation

¹ Special-status species are animals that are listed or proposed for listing under federal and/or state Endangered Species Acts as endangered or threatened; federal or state candidates for possible listing as endangered, threatened, or species of concern; and/or listed by the BLM as a sensitive species.

is a mixture of shrubs characteristically having Creosote (*Larrea tridentata*) as the dominant shrub with a Joshua tree (*Yucca brevifolia*) over-story. Other shrubs common to the area are the spiny menodora (*Menodora spinescens*) and burrobrush (*Hymenoclea salsola*), with white bursage (*Ambrosia dumosa*), Nevada ephedra (*Ephedra nevadensis*), and blackbrush (*Coleogyne ramosissima*) primary in some areas. Various cacti and other yucca species are also found throughout the area. Yucca and cacti are protected species in the State of Nevada under Nevada Revised Statutes.

"It is unlawful . . . to cut, destroy, mutilate, remove or possess any Christmas tree, cactus, yucca or branches thereof, . . . from any of the lands owned by or under the jurisdiction of the State of Nevada or its counties, or on any reserved or unreserved lands owned by the United States, or from any privately owned lands, without written permission from the legal owner, or his duly authorized agent, specifying locality by legal land description and number of plants to be removed or possessed." (NRS 527.101).

Wildlife typical to the Mojave Desert shrub and southern desert shrub habitat types include various small mammal and reptilian desert species such as the black-tailed jackrabbit (*Lepus californicus*), side-blotched lizard (*Uta stansburiana*), and collared lizard (*Crotaphytus* sp.). Also known to occur within the Study Area boundary are the Mojave Desert tortoise (*Gopherus agassizii*) and banded Gila monster (*Heloderma suspectum cinctum*). These special status species require a Nevada Division of Wildlife certified biologist to conduct surveys and act as an observer during most disturbance activities.

The Study Area may also fall within the Pacific flyway for migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (16 USC 703-712), as amended. The Clark County Multiple Species Habitat Conservation Plan (CCMSHCP) identified the birds listed in Table 3 as possibly inhabiting or utilizing portions of the Study Area. Mitigation measures and additional permits may be required as part of the CCMSHCP if construction activities are conducted during nesting season, February through August. The species of particular concern is the western burrowing owl (*Athene cunicularia hypugea*) known to nest in abandoned mines and listed as sensitive by the BLM.

The Study Area is not located within a BLM designated Area of Critical Environmental Concern (ACEC) or a Wilderness Study Area; however, it is adjacent to (within three to five miles or five to eight kilometers of) the Red Rocks Wild Horse and Burro Management Area (managed by Red Rocks Canyon National Conservation Area [NCA], which in turn is managed by the BLM under the National Landscape Conservation System) and the Bird Springs ACEC. Bird Springs has been designated for annexation into the Red Rocks Canyon NCA.

The southeast portion of the Study Area boundary includes a portion of the Desert Tortoise Translocation Area which is managed by the BLM, U.S. Fish and Wildlife Service (USFWS), and the Clark County Desert Conservation Program. Considerations will need to be made regarding tortoise/trail user interactions including the introduction of domestic dogs. A secondary consequence of increased human activity in this area is the attraction of tortoise predators such as the coyote and raven. Studies at the Ft. Irwin, California, military translocation site have shown that the occurrence of these two predators and associated predation on the tortoises increases with an increase in human activity (Esque et al. 2009). Close consultation with the BLM, USFWS, and the Clark County Desert Conservation Program is recommended for locating the proposed trail through this area.

Table 2. Special Status Species Occurring Within the Goodsprings Trail Study Area

Species Name	Common Name	US Fish and Wildlife Service Status	Nevada BLM	U.S. Forest Service	Nevada Native Plant Society	CCMSHCP	Flowering Season
<i>Erigeron ovinus</i>	sheep fleabane	species of concern	Sensitive	N/A	Listed	Evaluation Species	June - August
<i>Penstemon bicolor</i> ssp. <i>bicolor</i>	yellow twotone beardtongue	species of concern	Sensitive	Sensitive	Listed	Evaluation Species	April - May
<i>Penstemon bicolor</i> ssp. <i>roseus</i>	rosy twotone beardtongue	species of concern	Sensitive	Sensitive	Listed	Watch List Species	March - September
<i>Astragalus remotus</i>	Spring Mountains milkvetch	species of concern	Sensitive	Sensitive	Listed	Covered Species	April - May
<i>Gopherus agassizii</i>	Mojave Desert tortoise	Threatened	Protected	Threatened	N/A	Covered Species	March - September
<i>Heloderma suspectum cinctum</i>	banded Gila monster	species of concern	Sensitive	N/A	N/A	Evaluation Species	Varied

N/A – Not applicable

Table 3. CCMSHCP Possible Migratory Bird Encounters within the Goodsprings Trail Study Area

Species Name	Common Name	IUCN Red List*	USFWS	CCMSHCP	Nesting Period
<i>Falco peregrinus anatum</i>	American peregrine falcon	least concern	delisted 12/03	covered	March to June
<i>Toxostoma bendirei</i>	Bendire's thrasher	vulnerable	N/A	evaluation	February to August
<i>Vireo vicinior</i>	gray vireo	least concern	N/A	evaluation	April to June
<i>Toxostoma lecontei</i>	Le Conte's thrasher	least concern	N/A	evaluation	February to June
<i>Lanius ludovicianus</i>	loggerhead shrike	least concern	N/A	evaluation	March to June
<i>Phainopepla nitens</i>	Phainopepla	least concern	N/A	covered	February to July
<i>Sialia Mexicana</i>	western bluebird	least concern	N/A	evaluation	April to May
<i>Athene cunicularia hypugea</i>	western burrowing owl	least concern	(BLM designated sensitive)	evaluation	March to July

* International Union for the Conservation of Nature and Natural Resources: The Red List is a comprehensive inventory of the global conservation status of plant and animal species.

Cultural Resources

The Study Area is within the historic Yellow Pine Mining District established in 1882 and active until the 1960's. The Yellow Pine Mine rail line was taken up in 1934. A historical trading route, the Old Spanish Trail, was also established through this area in the 1930's.

Since detailed cultural inventories are completed on a project by project basis, a complete inventory of the Study Area has not yet been performed. The BLM Las Vegas Office and the Nevada State Historic Preservation Office (SHPO) will need to work closely with Clark County during subsequent design and planning stages in order to preserve existing cultural resources in the area. A detailed cultural field survey will be necessary during the NEPA evaluation.

Environmental Resources

Environmental resources identified within the Study Area are summarized in the subsequent sections. However, this summary does not evaluate the presence or absence of hazardous substances that may be located within the Study Area.

Geology and Soils

The Goodsprings Trail Study Area is located in southwestern Clark County, Nevada, and is encompassed by the southern Spring Mountains to the north and west, the Ivanpah Valley to the south and southeast, and the Bird Spring Range to the east. A majority of the Study Area has shallow, well-drained soils formed in mixed alluvium, which in turn was derived mainly from limestone and sandstone deposits.

The geology within this area comprises mainly Quaternary and Tertiary basin-fill deposits consisting of alluvium, lake deposits, sandstone, and siltstone; however the western and southwestern portions of the proposed trail study area are comprised of Paleozoic carbonate rocks, mainly consisting of limestone and dolomite (Burbey, 1995). Stratified beds in the area exhibit significant folding, and both thrust faults and high angle faults are evident.

Topography

The Study Area experiences a gradual rise in elevation from Jean, located at 2820 feet (860 meters) above mean sea level, to the Yellow Pine Mine area, averaging 4400 feet (1340 meters). Goodsprings has an elevation of 3700 feet (1128 meters). The Bird Spring Range east of Goodsprings rises to over 5000 feet (1525 meters); however, within the Study Area boundary the maximum elevation is around 4050 feet (1235 meters).

Visual Resources

The BLM Visual Resource Management (VRM) System classification for a majority of the Goodsprings Study Area is Class II, with Class III near Interstate 15 (I-15) and the Jean area, as identified in the BLM Las Vegas Resource Management Plan. Class II designations require the retention of the existing character of the landscape; whereas, Class III is managed for partial retention of the existing landscape character. No significant impact on the current VRM classification for the area is anticipated as a result of trail construction. However, other proposed projects in the area may impact the existing classifications. These projects include the development of detention basins in the Study Area, construction of the Ivanpah Airport on the east side of I-15, potential renewable energy development, and the proposed construction of an I-15 rail corridor.

Air Quality

The Study Area is located within Hydrographic Basin 164A, which has been designated as a nonattainment area for ozone. Increases in the emissions of ozone precursors, such as volatile organic compounds (VOCs) and nitrogen oxides (NO_x), may result in adverse impacts to air quality with respect to ozone. Such increases in emissions could be associated with the operation of heavy equipment during construction of the trail and additional automobile trips by users of the trail to access the facility. According to John Koswan of the Clark County Department of Air Quality and Environmental Management (CCDAQEM), potential adverse impacts to ozone levels associated with regional trail projects are addressed in the Air Quality Conformity Analysis completed by the Regional Transportation Commission of Southern Nevada (RTC) as part of their Transportation Improvement Program. A telephone interview was conducted with Jerry Duke of the RTC on July 14, 2009, who indicated that the existing air quality model that was used in the conformity analysis would have to be modified in order to quantify potential impacts to ozone levels as a result of the proposed trail project. Because such revisions have the potential to be labor intensive, it is recommended that Clark County work collaboratively with the BLM during scoping of the NEPA document to evaluate how potential impacts to air quality will be assessed.

Another potential impact to air quality during construction would result from the emissions of fugitive dust during earthwork activities. Desert soils in many areas have a natural crust at the surface which prevents dust from becoming airborne. However, activities such as construction or off-road vehicle use can break up this crust and release fugitive dust particulate matter into the air. In Clark County, any construction activities that disturb more than 0.25 acres are required to obtain a Dust Control Permit from the Clark County Department of Air Quality and Environmental Management (CCDAQEM) prior to the start of construction. The permit typically calls for implementing Best Management Practices during scheduled construction such as wetting techniques or application of a dust palliative. It should be noted that potential impacts from fugitive dust emissions are only anticipated during construction of the trail and, therefore, are temporary.

According to the *Clark County, Nevada Development Standards for Off-Street Trails* (hereinafter referred to as the Trail Development Standards) that were adopted by Clark County October 18, 2005, the Goodsprings Trail would be considered an equestrian, rural, and backcountry trail. These types of trails are generally constructed of, "aggregate or gravel, suitable native soil or crushed stone." Since the Study Area is located in an attainment area for particulate matter measuring less than ten microns in diameter (PM₁₀), the suitable trail surfaces that may be used are listed in Table 1 of the Trail Development Standards as aggregate, Type 2 gravel, or native soil.

A phone interview was conducted with John Richardson of CCAQEM on March 23, 2009. Mr. Richardson confirmed that a Dust Control Permit would be required for the Project. After consultation with his colleagues in the minor sources permitting group, Mr. Richardson also confirmed that once the trail is constructed, no further permitting would be required for using the trail to accommodate foot traffic or equestrian use. He said CCAQEM has reviewed the need to permit ongoing natural surface trail usage in the past and decided it was unnecessary.

Surface Water Resources

Perennial surface water resources do not exist within the Study Area. However, there are natural ephemeral drainage ways starting to the northwest of Goodsprings that convey runoff generated during rain events to the southeast towards Jean. Goodsprings is located within a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) Zone X, which is defined as outside

the 100-year flood zone. A FEMA SFHA Zone A, which is defined as a 100-year flood zone, does exist to the east of Goodsprings and traverses State Route 161 just southeast of the town before it bends to parallel the roadway alignment. The SFHA Zone A terminates at a dry lake bed located northwest of the interchange between Interstate 15 and State Route 161. The lake bed becomes saturated during seasonally heavy rain events. Copies of the FEMA Flood Insurance Rate Maps showing this flood zone have been provided in the Supporting Documents.

Flood control improvements proposed as part of the Study Area would need to be submitted to Clark County Regional Flood Control District for approval. Improvements proposed within the FEMA SFHA Zone A would also need to be submitted to FEMA for approval. Because surface waters within the Study Area are not considered Waters of the U.S., the Study Area would not be required to obtain a 404 permit from the U.S. Army Corps of Engineers.

Ground Water Resources

To review potential ground water resources in the Study Area, a search of the Nevada Division of Water Resources' (DWR) online database for underground active water rights was conducted on March 14, 2009. The results have been included in the Supporting Documents.

The Site is located within Hydrographic Basin 164A which has a perennial yield of 700 acre-feet annually (AFA). Of these, 687.03 AFA have been certificated by putting the water to beneficial use. A review of water rights holders in the basin was also completed. Clark County holds 2.18 AFA of certificated water rights that have been developed for stock watering purposes and 15.99 AFA permitted water rights that are designated for quasi-municipal uses. Considering the limited quantity of ground water resources available, landscaping that exerts minimal water requirements is recommended.

Site Visit Observations

Site Orientation

BEC team members participated in the site orientation visit with other members of the design team and the Goodsprings Trail Committee on January 27, 2009. During this orientation, BEC personnel, including a team biologist, conducted a windshield survey while driving Route 161 from Interstate 15 to the Town of Goodsprings and noted that the area adjacent to the roadway did not contain habitat that was likely to be suitable for threatened, endangered, and sensitive species due to frequent regrading and shoulder maintenance conducted by Nevada Department of Transportation (NDOT). The presence of *Penstemon* species was noted in some of the yards of private residences in town; however, since the plants were not in bloom, it could not be determined if the plants were a sensitive species.

Biological Site Visit

Sensitive plant species in Southern Nevada are difficult to identify, sometimes impossible, if not in bloom. Therefore, the Biological Site Visit was conducted in May, during a spring blooming period.

On May 28, 2009, a cursory survey was conducted of the Draft II Proposed Trail Alignment forwarded from Shapins Belt Collins. This survey focused on the trailheads, revegetation areas, equestrian trail, Ridge Trail, Goodsprings Overlook Trail, and the Cottonwood Pass Connector Trail. Photographs from the survey are located at the end of the Supporting Documents section.

The Draft II Proposed Trail Alignment indicated the trail would run along Gravel Haul Road until turning west on the north side of Goodsprings. This area contains a significant amount of potential historic

mining artifacts. There is also a concern for allowing equestrian traffic close to the private properties adjacent to Gravel Haul Road. These observations may impact the alignment for the equestrian trail.

Two vegetation habitats were observed in the Study Area. Lower elevations of the Study Area and the valley floor are dominated by a creosote (*Larrea tridentata*) habitat. Yucca (*Yucca schidigera*, *Yucca baccata*) and Joshua trees (*Yucca brevifolia*) also occur in pockets of high density. Ascending the Ridge Trail and along the higher elevation Goodsprings Overlook Trail the habitat type changes to blackbrush (*Coleogyne ramosissima*) with a limited number of Joshua trees.

No sensitive plant species were identified in the areas surveyed. The Study Area contains good habitat for the nakedstem sunray (*Enceliopsis nudicaulis* var. *nudicaulis*) which is a BLM sensitive species being considered for a threatened listing. However, individual plants were not observed in the area.

Various cacti were observed throughout the Study Area, including old man cactus (*Opuntia erinaciae*), beavertail cactus (*Opuntia basilaris*), cottontop cactus (*Echinocactus polycephalus*), hedgehog cactus (*Echinocereus engelmannii*), barrel cactus (*Ferocactus cylindraceus*), and pancake cactus (*Opuntia chlorotica*). Yucca and cacti are protected species in Nevada.

A listing of each of the species identified during the survey can be found in the Supporting Documents.

A Mojave Desert tortoise (*Gopherus agassizii*) was observed in a burrow approximately five feet from the east side of the existing Ridge Trail roadway (see photos #). The siting confirms tortoises are currently in the area. Non-sensitive species of animals, including rodents, black-tailed jackrabbits (*Lepus californicus*), leopard lizards (*Gambelia wislizenii*), and raptors were also observed in the area. Fledgling red-tailed hawks (*Buteo jamaicensis*) were seen in the nesting boxes and platforms on the substations and powerline towers on the east side of Highway 161 and near the proposed route for the equestrian trail.

Conclusions

The Goodsprings Trail Study Area encompasses land of biological, cultural and environmental significance. The rich mining history of the area combined with the biodiversity and aesthetics of the desert makes the Study Area an ideal destination for outdoor enthusiasts and naturalists. A summary of the constraints to developing the Goodsprings Trail and associated mitigation measures are presented in Table 4. Additional information regarding potential impacts to the area surrounding the final trail alignment will be delineated during the NEPA process.

Table 4. Environmental Constraints and Mitigation Measures for the Goodsprings Trail Study Area

Resource	Constraint	Mitigation
Biological	<ul style="list-style-type: none"> ▪ Presence of sensitive species, seasonal or permanent 	<ul style="list-style-type: none"> ▪ Coordinate alignment of proposed trail with various land and wildlife management authorities ▪ Discourage construction activities during migratory bird nesting season ▪ State certified biologist on site during disturbance activities

Cultural	<ul style="list-style-type: none"> Presence of culturally significant areas 	<ul style="list-style-type: none"> Survey prior to construction activities to identify and avoid culturally sensitive areas Promote public awareness and education of cultural significance and need for preservation
Air Quality	<ul style="list-style-type: none"> Fugitive dust particulates generated during construction activities Located in ozone nonattainment area 	<ul style="list-style-type: none"> Obtain CCDAQEM Dust Control Permit prior to construction Implement Best Management Practices during construction activities Use of aggregate or native soil for trail surface Work collaboratively with BLM during the NEPA scoping process to determine how potential impacts to ozone levels will be assessed
Water	<ul style="list-style-type: none"> Existing ephemeral drainage ways, FEMA designated Special Flood Hazard Areas Available quantity limited (none) for trail maintenance 	<ul style="list-style-type: none"> Obtain CCRFCD and/or FEMA approval for construction of flood control improvements Incorporate landscaping that minimizes or eliminates water use requirements after construction is completed
Geology	<ul style="list-style-type: none"> Potential for abandoned mine openings near proposed trail route 	<ul style="list-style-type: none"> Coordinate with the US Army Corps of Engineers, BLM and the Bureau of Reclamation to identify and close potentially dangerous mine entrances

Biological and cultural issues need to be taken into consideration in the development of a trail system in this area of Clark County. However, the limited footprint of the project and adaptive design of the trail should mitigate possible issues that may develop during the comprehensive archeological and biological surveys that will be conducted as part of the NEPA process once the Project is allowed to proceed. The main concern at this point is the alignment of the trail through the sensitive Desert Tortoise Translocation Area near I-15. Careful review of alternative alignments and active collaboration with area stake holders, including the multiple land owners, will bring about an acceptable resolution to most issues.

Please do not hesitate to contact me at 702-304-9830 or Erika@becnv.com if you have questions regarding this summary or require additional information. Thank you.

Sincerely,

Erika Balderson
Biologist

CC: Kathleen Johnson, BEC
Eileen Christensen, BEC

Supporting Documents:

FEMA Flood Zone Maps.

Nevada Natural Heritage Program Data Request, January 12, 2009.

Nevada Division of Water Resources Hydrographic Abstract, Basin 164a, March 14, 2009.

Biological Survey plant species identified.

Biological Survey photo documentation.

References Used:

Burbey, Thomas J., Hydrogeology and Potential for Development of Carbonate-Rock Aquifers in Southern Nevada and Southeastern California, USGS Water-resources Investigations Report 95-4168, 1995.

Clark County Department of Air Quality and Environmental Management, *Clark County, Nevada Development Standards for Off-Street Trails*, October 18, 2005.

Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*), Region 8, California and Nevada, U.S. Fish and Wildlife Service, Sacramento, California, August 2008.

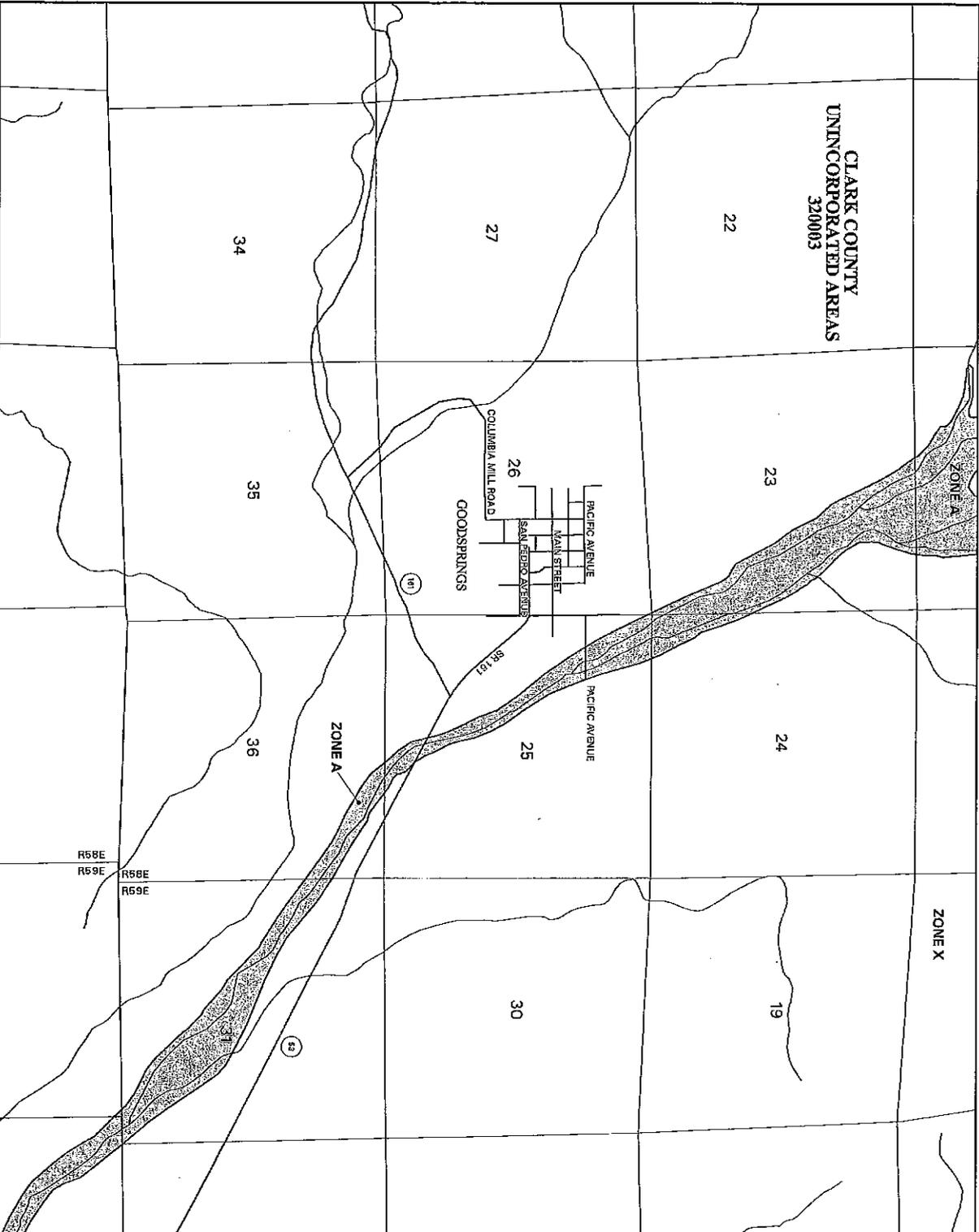
Esque, Todd C., K.E. Nussear, W.I. Boarman, A.D. Walde, A.P. Woodman, K.H. Berry, R.C. Averill-Murray, C.R. Darst, K.K. Drake, J. Mack, P.A. Medica, and J.S. Heaton. 2009. "Predation and Translocated Desert Tortoises at Ft. Irwin National Training Center: Separating Fact from Fiction", paper presented at the Desert Tortoise Council 34th Annual Symposium, February 20-22, 2009, Mesquite, Nevada.

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<<http://www2.ftw.nrcs.usda.gov/osd/dat/G/GOODSPRINGS.html>>. Downloaded on 29 June, 2009.



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 3100 OF 4090

SEE MAP INDEX FOR FIRM PANEL LAYOUT

DATE: JUNE 2002
CONTRACT: JUNE 2002
CLARK COUNTY: UNINCORPORATED AREAS

MAP NUMBER
32003C3100 E
MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

This is an official copy of a portion of the above title revised flood map. It was extracted from the original map and is not to be used for any other purpose. Any use of this map for purposes other than those intended by the Federal Emergency Management Agency may have been made subsequent to the date on the title block. Further information about National Flood Insurance Program flood hazard maps is available at www.floodmaps.com.

NEVADA NATURAL HERITAGE PROGRAM DATA REQUEST FORM

rev. WXP-2007-06

Use this form to query the Nevada Natural Heritage Program database for location information of at-risk species. Please fill out this form as completely and specifically as possible, attaching additional sheets as needed. For more information on available species and data fields, fees, limitations, and restrictions, please visit our web site <<http://heritage.nv.gov>> or contact us for printed information. We cannot guarantee our response time; normal time is about two weeks, and we will strive to (and usually can) meet more urgent deadlines.

Date signed: 08 January 2009 Date needed: 02 February 2009

Organization: BEC Environmental, Inc.

Mailing Address: 9061 W. Sahara Ave., Suite 103, Las Vegas, NV, 89117

Phone: 702-304-9830 FAX: 702-304-9839 email: Erika@becnv.com

Project or Site Name: Goodsprings Trail Study

How will the information be used? Environmental assessment for trail alignment

KIND OF SEARCH

(see current fee schedule <<http://heritage.nv.gov/fees.htm>> for descriptions, costs, and examples)

Standard (one-time), OR... Annual Subscription: first year continuation

LIMIT SEARCH BY THE FOLLOWING CRITERIA

(check or complete all that apply to ensure you purchase only the records you want)

Location (please specify by township-range-section, map quadrangle, watershed, or other boundaries, and attach map(s) when possible; for GIS requests, submit polygon(s) of area(s) in UTM Zone-11 meter coordinates, NAD27 datum, as ArcView® shapefiles if possible):

ArcView shapefile attached for T24SR58E Sect. 14-17, 20-23, 25-27, 34-36; T24SR59E Sect. 31-32; and T25SR59E Sect. 3-5, 10-11.

Species: all plants all animals all vertebrates all invertebrates

other (specify groups/taxa):

Status: all at-risk all federal T/E/candidate all state T/E all watch-list

Additional Limiting Criteria (please specify; see data catalog <<http://heritage.nv.gov/dataflds.htm>> for searchable fields):

FORMAT AND CONTENT OF SEARCH RESULTS

(see fee schedule <<http://heritage.nv.gov/fees.htm>> and data catalog <.../dataflds.htm> for format descriptions and available fields)

Standard Summary Records (name, status, location, precision, date), specify: printed ASCII text file

OR Complete or Customized (enter desired fields below) Records, specify: printed ASCII text file

OR ArcView® GIS shapefiles (complete records only), specify:

projection (none=UTM Zone-11 meters): _____ datum (blank=NAD27): NAD83

Custom Fields (enter names or types of ALL data fields to include for custom records):

HOW YOU WANT THE RESULTS SENT

Please Send: search results immediately cost estimate first exact cost first

Send by any of the following checked methods: U.S. Mail FAX email FedEx

For FedEx, include PHYSICAL address above, and specify account to charge:

BY SIGNING BELOW, I acknowledge that I have read and agreed to abide by the Nevada Natural Heritage Program's (NNHP's) current fee schedule <<http://heritage.nv.gov/fees.htm>> and its data limitations and restrictions <.../limitats.htm> (contact us for printed copies). I also agree that (1) all data supplied, and the analytic tools and processes from which they are derived, are the privileged, confidential property of NNHP, and/or The Nature Conservancy, Inc., and/or those who supplied the data to NNHP, and will not be provided to any other party without our consent; (2) in any use of the data, NNHP will be cited as a source, along with the year and month it supplied the data; and (3) while NNHP strives for accuracy and completeness, the data it supplies depend on the observations and research of many individuals and organizations, new data are constantly received, and in no case will the data be represented as a complete survey of any species or area.



Signature

Erika Balderson

Name (please print)

Project Manager

Title

Please MAIL or FAX completed and signed form to: Nevada Natural Heritage Program, attn: Data Manager, 901 S Stewart St, suite 5002, Carson City NV 89701-5245. FAX (775) 684-2909, phone (775) 684-2905.

ALLEN BIAGGI
Director

Department of Conservation
and Natural Resources

JENNIFER E. NEWMARK
Administrator

JIM GIBBONS
Governor



Nevada Natural Heritage Program
Richard H. Bryan Building
901 S. Stewart Street, suite 5002
Carson City, Nevada 89701-5245
U.S.A.

tel: (775) 684-2900
fax: (775) 684-2909



STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Nevada Natural Heritage Program
<http://heritage.nv.gov>

12 January 2009

Erika Balderson
BEC Environmental, Inc.
9061 W. Sahara Ave., Suite 103
Las Vegas, NV 89117

Dear Ms. Balderson:

Please find two sets of shape files containing the recorded endangered, threatened, candidate, and At Risk plant and animal elements (taxa) within the Goodsprings Trail Study Project (assumed to be extant, unless mentioned otherwise). This data set is packaged in GIS ArcView Format (projected, UTM Zone 11, NAD 1927). The files contain two separate shape file sets, which contain the recorded element occurrence records (EORs) within Nevada and their associated attributes for the Goodsprings Trail Study Project the files are labeled; bec_goodsprngs_obs.xxx and bec_goodsprngs_comb.xxx. Please refer to the Biotics Metadata (in pdf format) for explanations and interpretations of each data set along with its respective attributes.

Please find an enclosed list of elements for which precise locations are considered sensitive. A listing of these EORs with general locational data (township, range) is provided. Precise data may be supplied upon request if sufficient need can be demonstrated and confidentiality can be guaranteed.

In addition to the species location data provided with this response, the Nevada Natural Heritage Program (NNHP) has other location records in [and/or] near your project area that are awaiting final quality-control and data input processes. Within one kilometer of the boundary that was searched for your project, these include:

Penstemon bicolor ssp. *bicolor*, (yellow twotone beardtongue) and *Penstemon bicolor* ssp. *roseus* (rosy twotone beardtongue) both Nevada Bureau of Land Management (BLM) Sensitive Species located within, Township 24S Range 58E Sections 15, 27 and 32; Township 25S Range 59E Sections 04, 05 and 10 also, *Astragalus mohavensis* var. *mohavensis* (Mojave milkvetch) a Taxon determined to be Vulnerable by the Nevada Natural Heritage Program, located in Township 24S Range 58E Section 27.

If you have further questions concerning this occurrence please contact me at (775 684-2905) for more specific location data.

12 January 2009

Please note that your use of these data is contingent upon your acknowledgment of the enclosed DATA LIMITATIONS AND RESTRICTIONS (revised 15 January 1998). In particular, please be aware that we furnish data with the understanding that these data are privileged and are not to be provided to a third party without our consent. Products derived from our data should cite the Nevada Natural Heritage Program as a source, along with the month and year in which we provided the data.

Many of our documents, including species lists and keys to our symbols, can be found on our website www.state.nv.us/nvnhp/. Please visit our website to learn more about our program and the sensitive species of Nevada.

Sincerely,



Eric S. Miskow
Biologist/Data Manager

Data Sensitive Taxa Recorded Near the Goodsprings Trail Study Project Area

Compiled by the Nevada Natural Heritage Program for BEC Environmental, Inc.

12 January 2009

<u>Scientific name</u>	<u>Common name</u>	<u>Usfws</u>	<u>Blm</u>	<u>Usfs</u>	<u>State</u>	<u>Grank</u>	<u>TownRange</u>	<u>Prec</u>	<u>Last observed</u>
Reptiles									
<i>Heloderma suspectum cinctum</i>	banded Gila monster	xC2,NL	N;C	YES	S2	G4T4	T25S R59E	S	1978

U. S. Fish and Wildlife Service (Usfws) Categories for Listing under the Endangered Species Act:

- x C2 Former Category 2 Candidate, now species of concern
- NL Not Listed (no status) in a portion of the species' range

Bureau of Land Management (Blm) Species Classification:

- N Nevada Special Status Species - designated Sensitive by State Office
- C California Special Status Species (see definition S and N)

Nevada State Protected (State) Species Classification:

- Fauna: YES Species protected under NRS 501.

Precision (Prec) of Mapped Occurrence:

Precision, or radius of uncertainty around latitude/longitude coordinates:

- S Seconds: within a three-second radius
- M Minutes: within a one-minute radius, approximately 2 km or 1.5 miles
- G General: within about 8 km or 5 miles, or to map quadrangle or place name

Nevada Natural Heritage Program Global (Grank) and State (Srank) Ranks for Threats and/or Vulnerability:

- G Global rank indicator, based on worldwide distribution at the species level
 - T Global trinomial rank indicator, based on worldwide distribution at the infraspecific level
 - S State rank indicator, based on distribution within Nevada at the lowest taxonomic level
- 1 Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, imminent threats, or other factors
 - 2 Imperiled due to rarity or other demonstrable factors
 - 3 Vulnerable to decline because rare and local throughout its range, or with very restricted range
 - 4 Long-term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery
 - 5 Demonstrably secure, widespread, and abundant
- A Accidental within Nevada
 - B Breeding status within Nevada (excludes resident taxa)
 - H Historical; could be rediscovered
 - N Non-breeding status within Nevada (excludes resident taxa)
 - Q Taxonomic status uncertain
 - U Unrankable
 - Z Enduring occurrences cannot be defined (usually given to migrant or accidental birds)
 - ? Assigned rank uncertain

Nevada Division of Water Resources

Hydrographic Basin Summary By Application Status

Hydrographic Basin: 164A Yield: 700 AFA
 Hydrographic Region: 10 CENTRAL Reference: State Engineer Ruling 4324
 Basin Name: IVANPAH VALLEY-NORTHERN PART Remarks:

Status	Annual Duty Underground*		Annual Duty Geothermal*		Annual Duty Other Groundwater*		Annual Duty Total*	
	Acre Feet	Million Gal.	Acre Feet	Million Gal.	Acre Feet	Million Gal.	Acre Feet	Million Gal.
VST	1.00	0.33	0.00	0.00	0.00	0.00	1.00	0.33
RES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
APP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RFA	50.50	16.46	0.00	0.00	0.00	0.00	50.50	16.46
PER	1,416.73	461.64	0.00	0.00	0.00	0.00	1,416.73	461.64
RLP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RVP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CER	687.03	223.87	0.00	0.00	0.00	0.00	687.03	223.87
DEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOTE: RFA Status Includes Protested Applications (RFP's)

Nevada Division of Water Resources

Hydrographic Basin Summary By Manner of Use

Hydrographic Basin: 164A Yield: 700 AFA
 Hydrographic Region: 10 CENTRAL Reference: State Engineer Ruling 4324
 Basin Name: IVANPAH VALLEY-NORTHERN PART Remarks:

Manner of Use	Active Annual Duty*		Pending Annual Duty*	
	Acre Feet	Million Gal.	Acre Feet	Million Gal.
COM	10.26	3.34	49.50	16.13
CON	0.00	0.00	0.00	0.00
DOM	15.93	5.19	0.00	0.00
ENV	0.00	0.00	0.00	0.00
IND	250.00	81.46	0.00	0.00
IRC	0.00	0.00	0.00	0.00
IRD	0.00	0.00	0.00	0.00
IRR	0.00	0.00	0.00	0.00
MM	397.73	129.60	0.00	0.00
MUN	0.00	0.00	0.00	0.00
PWR	0.00	0.00	0.00	0.00
QM	1420.39	462.83	0.00	0.00
REC	0.00	0.00	0.00	0.00
STK	10.46	3.41	0.00	0.00
STO	0.00	0.00	0.00	0.00
WLD	0.00	0.00	0.00	0.00
OTH	0.00	0.00	0.00	0.00
Totals:	2,104.76	685.84	49.50	16.13
BASIN STATUS:	DESIGNATED (ID)	SUPPLEMENTALLY ADJUSTED:	Y	01-11-2008

* May include supplemental duties as well as duties associated with applications to change

Hydrographic Abstract

Number of Records: 55

Selection Criteria: basin IN ('164a') AND app_status IN ('APP','CER','PER','RES','RFA','RFP','RLP','RVP','VST','DEC')

Basin	Application	Change of Application	Cert	File date	App status	Source	Point of Diversion					Diversion rate	Use	Irrigated Acres	Duty balance	Sup?	CO	Owner name
							QQ	Q	SEC	TWN	RNG							
164A	17691		6058	10-22-58	CER	UG	NW	NW	13	25S	59E	0.750	QM	0.00	14.55	Y	CL	SIMON, MARGUERITE
		CHANGED BY: 51542			CAN	UG										Y		
	18460		5188	12-03-59	CER	UG	NE	SW	14	25S	59E	0.022	DOM	0.00	15.93		CL	NDOT
	18559		5557	02-05-60	CER	OSW	NW	SE	21	26S	59E	0.003	STK	0.00	2.18		CL	CLARK COUNTY
	21997		8278	05-15-64	CER	UG	NW	NW	13	25S	59E	0.454	IND	0.00	85.25	Y	CL	LAS VEGAS VALLEY WATER DISTRICT
	23141		7363	05-18-66	CER	UG	SW	SE	26	26S	59E	0.011	STK	0.00	7.96		CL	BOW AND ARROW RANCH LLC
	25445		8515	01-27-70	CER	UG	NE	SE	26	24S	58E	0.030	COM	0.00	7.24		CL	CLARK COUNTY SCHOOL DISTRICT
	34626			11-17-77	PER	UG	NE	NW	26	24S	58E	0.500	QM	0.00	15.99		CL	CLARK COUNTY
	38247		10656	05-30-79	CER	UG	NE	NE	21	27S	60E	0.003	STK	0.00	2.50		CL	BOW AND ARROW RANCH LLC
		CHANGED BY: 50158			CAN	UG												
	38249		12196	05-30-79	CER	SPR	NW	NW	18	27S	61E	0.001	STK	0.00	0.72		CL	CLARK COUNTY
		CHANGED BY: 67806			WDR	SPR												
	38250		12197	05-30-79	CER	SPR	SW	SW	18	27S	61E	0.001	STK	0.00	0.72		CL	CLARK COUNTY
		CHANGED BY: 67807			WDR	SPR												
	50808			04-10-87	PER	UG	SW	NE	10	27S	59E	1.000	QM	0.00	322.02	Y	CL	PRIMM SOUTH REAL ESTATE COMPANY
		CHANGED BY: 57528			WDR	UG										Y		
	51133		21505 13800	07-22-87	CER	UG	NW	SE	09	25S	59E	0.088	QM	0.00	12.37	Y	CL	LAS VEGAS VALLEY WATER DISTRICT
	51543		21630 13801	11-09-87	CER	UG	NW	SE	09	25S	59E	0.088	QM	0.00	12.37	Y	CL	LAS VEGAS VALLEY WATER DISTRICT
	51544		35104 13802	11-09-87	CER	UG	NW	SE	09	25S	59E	0.136	QM	0.00	68.59	Y	CL	LAS VEGAS VALLEY WATER DISTRICT
	51872		35617	02-25-88	PER	UG	NW	NE	09	27S	59E	0.444	QM	0.00	322.02	Y	CL	PRIMM SOUTH REAL ESTATE COMPANY
		CHANGED BY: 57531			WDR	UG										Y		
	51873		35618	02-25-88	PER	UG	NW	NE	09	27S	59E	0.444	QM	0.00	322.02	Y	CL	PRIMM SOUTH REAL ESTATE COMPANY
		CHANGED BY: 57530			WDR	UG										Y		
	52087			05-13-88	PER	UG	NW	NE	09	27S	59E	1.000	QM	0.00	546.02	Y	CL	PRIMM SOUTH REAL ESTATE COMPANY
		CHANGED BY: 69272T			EXP	UG										Y		
	52088			05-13-88	PER	UG	NW	NE	09	27S	59E	1.000	QM	0.00	546.02	Y	CL	PRIMM SOUTH REAL ESTATE COMPANY
	52687			11-03-88	PER	UG	NW	NE	09	27S	59E	1.000	QM	0.00	205.00	Y	CL	PRIMM SOUTH REAL

Number of Records: 55

Selection Criteria: basin IN ('164a') AND app_status IN ('APP','CER','PER','RES','RFA','RFP','RLP','RVP','VST','DEC')

Basin	Application	Change of Application	Cert	File date	App status	Source	Point of Diversion					Diversion rate	Use	Irrigated Acres	Duty balance	Sup?	CO	Owner name
							QQ	Q	SEC	TWN	RNG							
											1.000						ESTATE COMPANY	
		CHANGED BY: 64247			CAN	UG									Y			
		CHANGED BY: 64248			CAN	UG									Y			
		CHANGED BY: 64249			CAN	UG									Y			
52733		42814		11-28-88	PER	UG	NW	SE	09	25S	59E	0.264	QM	0.00	191.10	Y	CL LAS VEGAS VALLEY WATER DISTRICT	
52734		42814		11-28-88	PER	UG	SE	NE	10	25S	59E	0.334	QM	0.00	241.80	Y	CL LAS VEGAS VALLEY WATER DISTRICT	
		CHANGED BY: 69542T			CAN	UG										Y		
		CHANGED BY: 69543T			CAN	UG										Y		
52735		14635		11-28-88	CER	UG	NW	NW	13	25S	59E	0.022	QM	0.00	16.00	Y	CL LAS VEGAS VALLEY WATER DISTRICT	
54983		52736		06-22-90	PER	UG	NW	SW	10	25S	59E	0.187	QM	0.00	135.40	Y	CL LAS VEGAS VALLEY WATER DISTRICT	
64208				06-08-98	PER	UG	SE	NE	01	26S	59E	2.000	MM	0.00	397.73	Y	CL CALLAHAN, GENE	
		CHANGED BY: 70148T			DEN	UG										Y		
66923				11-06-00	PER	UG	NE	SW	06	26S	60E	1.000	IND	0.00	250.00		CL SIERRA READY MIX LLC.	
67135				01-12-01	PER	UG	NE	SW	31	24S	60E	0.100	COM	0.00	2.02		CL KIWI, LLC.	
68917				06-26-02	PER	EFF	SW	NE	09	27S	59E	1.547	STO	0.00	326.00		CL PRIMM SOUTH REAL ESTATE COMPANY	
68917S01				06-26-02	PER	EFF	SW	NE	09	27S	59E	1.547	PWR	0.00	326.00		CL PRIMM SOUTH REAL ESTATE COMPANY	
68945		50701		07-10-02	PER	UG	SE	NW	10	27S	59E	1.000	QM	0.00	322.02	Y	CL PRIMM SOUTH REAL ESTATE COMPANY	
69287				10-31-02	RFA	UG	NE	SW	33	23S	58E	0.067	COM	0.00	48.50		CL LAS VEGAS ROCK	
75400				02-28-07	RFP	UG	NE	SE	01	26S	59E	3.000	MM	0.00	0.00		CL GOLDEN REEF MINING CO.	
76210		52732		08-29-07	PER	UG	NE	NW	13	25S	59E	0.092	QM	0.00	66.60	Y	CL LAS VEGAS VALLEY WATER DISTRICT	
77051				05-14-08	RFA	UG	SE	NE	26	24S	58E	0.003	COM	0.00	1.00		CL GIL STEELHEAD, LLC	
77052		V04953		05-14-08	RFA	UG	SE	NE	26	24S	58E	0.003	COM	0.00	1.00		CL GIL STEELHEAD, LLC	
77693				12-17-08	RFA	EFF	NW	NW	13	25S	59E	1.006	STO	0.00	728.00		CL JEAN DEVELOPMENT COMPANY, D/B/A GOLD STRIKE HOTEL & GAMBLING HALL	
		CHANGED BY: 77693S			RFA	STO												
		CHANGED BY: 77693S			RFA	STO												
77693S01		77693		12-17-08	RFA	STO	NW	NW	13	25S	59E	1.006	IRR	0.00	728.00		CL JEAN DEVELOPMENT COMPANY, D/B/A GOLD STRIKE HOTEL & GAMBLING HALL	
77693S02		77693		12-17-08	RFA	STO	NW	NW	13	25S	59E	1.006	OTH	0.00	728.00		CL JEAN DEVELOPMENT COMPANY, D/B/A GOLD STRIKE HOTEL & GAMBLING HALL	
V04953				10-13-89	VST	UG	SE	NE	26	24S	58E	0.000	COM	0.00	1.00		CL GIL STEELHEAD, LLC	
		CHANGED BY: 77052			RFA	UG												

CODE DEFINITIONS FOR WATER RIGHTS DATABASE

APPLICATION STATUS

ABN	ABANDONED
ABR	ABROGATED
APP	APPLICATION
CAN	CANCELLED
CER	CERTIFICATE
CUR	CURTAILED
DEC	DECREED
DEN	DENIED
EXP	EXPIRED
FOR	FORFEITED
PER	PERMIT
RFA	READY FOR ACTION
RFP	READY FOR ACTION (PROTESTED)
RLP	RELINQUISH A PORTION
REL	RELINQUISHED
RES	RESERVED
RVP	REVOCABLE PERMIT
RVK	REVOKED
SUP	SUPERCEDED
SUS	SUSPENDED
VST	VESTED RIGHT
WDR	WITHDRAWN
REJ	REJECTED

COUNTY

AL	ALPINE
CC	CARSON CITY
CH	CHURCHILL
CL	CLARK
DO	DOUGLAS
EL	ELKO
ES	ESMERALDA
EU	EUREKA
HU	HUMBOLDT
LA	LANDER
LI	LINCOLN
LY	LYON
MI	MINERAL
NY	NYE
PE	PERSHING
ST	STOREY
WA	WASHOE
WP	WHITE PINE

USE

COM	COMMERCIAL
CON	CONSTRUCTION
DEC	AS DECREED
DOM	DOMESTIC
DWR	DEWATERING
ENV	ENVIRONMENTAL
IND	INDUSTRIAL
IRC	IRRIGATION-CAREY ACT
IRD	IRRIGATION-DLE
IRR	IRRIGATION
MM	MINING AND MILLING
MUN	MUNICIPAL
OTH	OTHER
PWR	POWER
QM	QUASI-MUNICIPAL
REC	RECREATIONAL
STK	STOCKWATERING
STO	STORAGE
UKN	UNKNOWN
WLD	WILDLIFE
MMD	MINING, MILLING AND DEWATERING

SOURCE

EFF	EFFLUENT
GEO	GEOTHERMAL
LAK	LAKE
OGW	OTHER GROUND WATER
OSW	OTHER SURFACE WATER
RES	RESERVOIR
SPR	SPRING
STO	STORAGE
STR	STREAM
UG	UNDERGROUND
UKN	UNKNOWN

Table 1. Plant species identified during the Biological Site Visit.

Species Name	Common Name
Achnatherum speiosum	needle grass
Adenophyllum cooperi	Coopers dyssodia
Ambrosia dumosa	white bursage
Aristida purpurea	purple aristida
Baileya multiradiata	desert marigold
Bromus rubens	red brome
Coleogyne ramosissima	blackbrush
Echinocactus polycephalus	cotton top cactus
Echinocereus engelmannii	hedgehog cactus
Encelia farinosa	brittlebush
Ephedra nevadensis	Nevada ephedra
Eriogonum fasciculatum	California buckwheat
Eriogonum inflatum	desert trumpet
Erioneuron pulchellium	fluff grass
Ferocactus cylindraceus	barrel cactus
Gaura coccinea	scarlet gaura
Gutierrezia microcephala	snakeweed
Hymenoclea salsola	cheesebush
Krameria erecta	rhatany
Krascheninnikovia lantana	winterfat
Larrea tridentata	cresote
Lycium andersonii	wolfberry
Menodora spinescens	spiny menodora
Opuntia basilaris	beavertail cactus
Opuntia chlorotica	pancake cactus
Opuntia erinaciae	old man cactus
Packera multilobatus	lobed groundsel
Plantago major	common plantain
Prunus fasciculata	desert almond
Psilostrophe cooperi	whitestem paperflower
Salazaria mexicana	paper-bag bush
Salvia dorrii	Mojave sage
Schismus barbatus	common Mediterranean grass
Sphaeralcea ambigua	globe mallow
Stephanomeria pauciflora	wirelettuce
Thymophylla pentachaeta	fiveneedle pricklyleaf
Xylorhiza tortifolia	Mojave aster
Yucca baccata	banana yucca
Yucca brevifolia	Joshua tree
Yucca shidigera	Mojave yucca



Figure 1. Jean trailhead along Highway 161, looking NW.



Figure 2. Spring trailhead area, looking south along Draft II trail alignment.



Figure 3. Bird Spring trailhead, looking toward Bird Spring Mountain (east). Red-tailed hawk nest located on powerline tower.



Figure 4. Bird Spring Mountain Loop Trail area, from trailhead area.



Figure 5. North end of the Bird Spring Mountain Loop Trail.



Figure 6. South trailhead for the proposed equestrian trail, looking north.



Figure 7. West bend in the equestrian trail, looking south along Gravel Haul Road.



Figure 8. West bend area of the equestrian trail, looking north.



Figure 9. West bend area of the equestrian trail, looking NW.



Figure 10. West bend area of the equestrian trail, looking west towards the fire station.



Figure 11. West end of the equestrian trail, looking back west at possible historical artifacts.



Figure 12. West bend area of the equestrian trail, looking south along the east edge of Goodsprings.



Figure 13. South Ridge Trail access, looking west towards the fire station.



Figure 14. Looking north towards the Goodsprings Overlook Trail from the fire station location.



Figure 15. Upper Wash Trail area, looking NW from the Ridge Trail.



Figure 16. Looking north towards the Goodsprings Overlook Trail from the Ridge Trail.



Figure 17. North access trail area for the Ridge Trail.

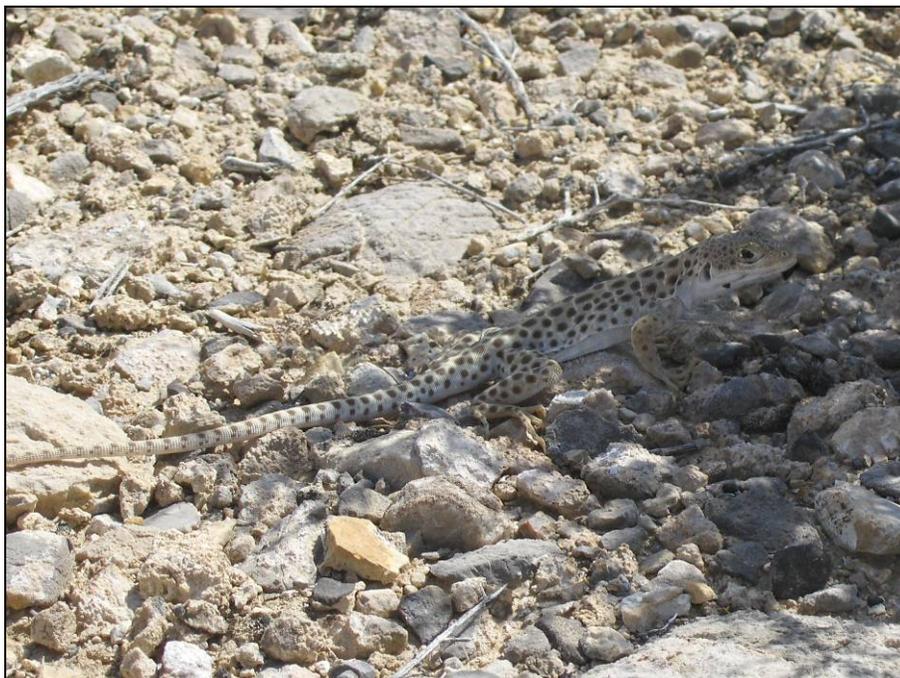


Figure 18. Ridge Trail leopard lizard.



Figure 19. On the Ridge Trail, looking NW.



Figure 20. South end Ridge Trail Restoration area, looking west.



Figure 21. Ridge Trail desert tortoise area, looking north.



Figure 22. Ridge Trail desert tortoise and burrow.



Figure 23. Ridge Trail view to the north.



Figure 24. A view of Goodsprings from Ridge Trail, looking SE.



Figure 25. View of the valley floor from the Ridge Trail, looking north.



Figure 26. North end Ridge Trail Restoration area.



Figure 27. Cottonwood Pass Connector trailhead area, looking NE.

APPENDIX 3

NEVADA BY DESIGN: HYDROLOGY REPORT

Goodsprings Trails Study

INTRODUCTION

The purpose of this report is to present the general conditions of the present hydrology in the locations of the proposed trails and impacts that can be expected and considered in the final design of the trails in the area. This report considers information found in the "Clark County Regional Flood Control District Master Plan Update, 2009 Outlying Areas, Goodsprings". Recommendations for the drainage facilities necessary to convey these flows from that study are included.

This report will also provide some recommendations for trail sections in the areas that may be impacted by the flows identified in above mentioned CCRFCD Master Plan Update as well as other Subbasins not identified.

FLOOD HAZARD ZONE

The proposed trail alignment is impacted by a flood plain located east of the Goodsprings community as shown on FEMA Flood Insurance Rate Map Number 32003C3100E revised September 27, 2002. (See attached Figure) This map shows that the trail will cross the flood plain in one location within Shaded Special Flood Zone A. Areas within Shaded Zone "A" are classified as areas determined to have a 1% annual chance of flood (100-year floodplain).

REGIONAL FLOOD CONTROL FACILITIES

The project is not expected to impact existing or proposed flood control facility as shown as Figure 6 of the referenced Clark County Regional Flood Control District Master Plan Update, 2009. The trail in the areas of the flood control facilities, especially in the Goodsprings residential community will require independent improvements. Coordination will need to occur with Clark County Regional Flood Control District and Clark County Public Works to ensure that the trail improvements and/or the flood control improvements will not have a significant impact on each other.

DRAINAGE DESCRIPTION

The succeeding discussions will summarize the flow patterns at the present time as analyzed for this project report. This scenario represents the worst case.

The project is located within the community where the drainage flow patterns are already established. The major runoff flows in the areas of the trail alignments is in a major drainage basin that crosses the valley between the Goodsprings townsite and Bird Springs Mountain. There is a major wash that conveys the flows of this drainage

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation (BFE)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (CBFE) shown on this map apply only landward of G.D. North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) Zone 11. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/C/G13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1999 or newer, and GBR/DIME data. Segments were digitized off of the orthophotography based on center of segment.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this **PANEL**, may be available. Contact the **FEMA Map Services Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616
FAX: 800-358-9620
www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.

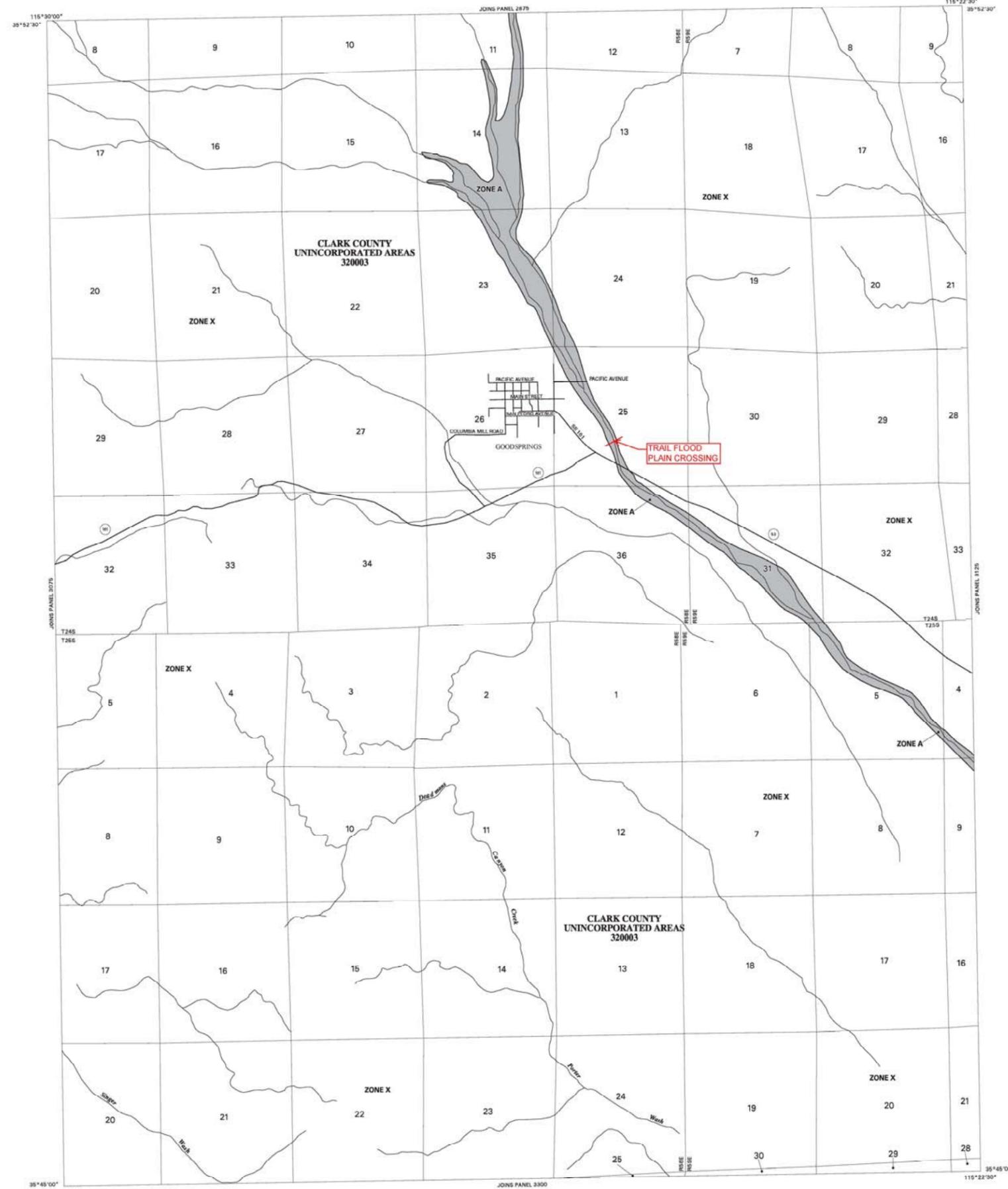
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:
+ Southern Nevada GIS - Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

+ The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 311 dispatch services. This centerline database serves as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: <http://www.co.clark.nv.us/celit/gis/gisinfo.htm>



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
- ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**

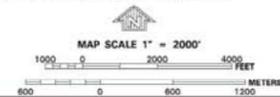
- Floodplain Boundary
- - - Floodway Boundary
- - - Zone D Boundary
- - - Coastal Barrier Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, Flood depths or velocities.
- Base Flood Elevation line and value; elevation in feet*
- (BL 987) Base Flood Elevation value where uniform within contour; elevation in feet*

- *Referenced to the North American Vertical Datum of 1988
- (A) Cross Section Line
- (2) Transsect Line
- 91°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT 5000-foot grid ticks
- DX5519 Bench mark (see explanation in Notes to Users section of the FIRM panel)
- M1.5 River Mile
- MAP REPOSITORY
- Refer to Repository Listing on Index Map
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
- AUGUST 16, 1996
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 27, 2002: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change zone designations, to add roads and road names, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendment, and to change floodway.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6820.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 3100 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA AND
INCORPORATED AREAS

PANEL 3100 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY UNINCORPORATED AREAS	320003	3100	E

Notice to User: The Map Number shown below should be used when using map order. The Community Number shown above should be used on insurance applications for the subject community.

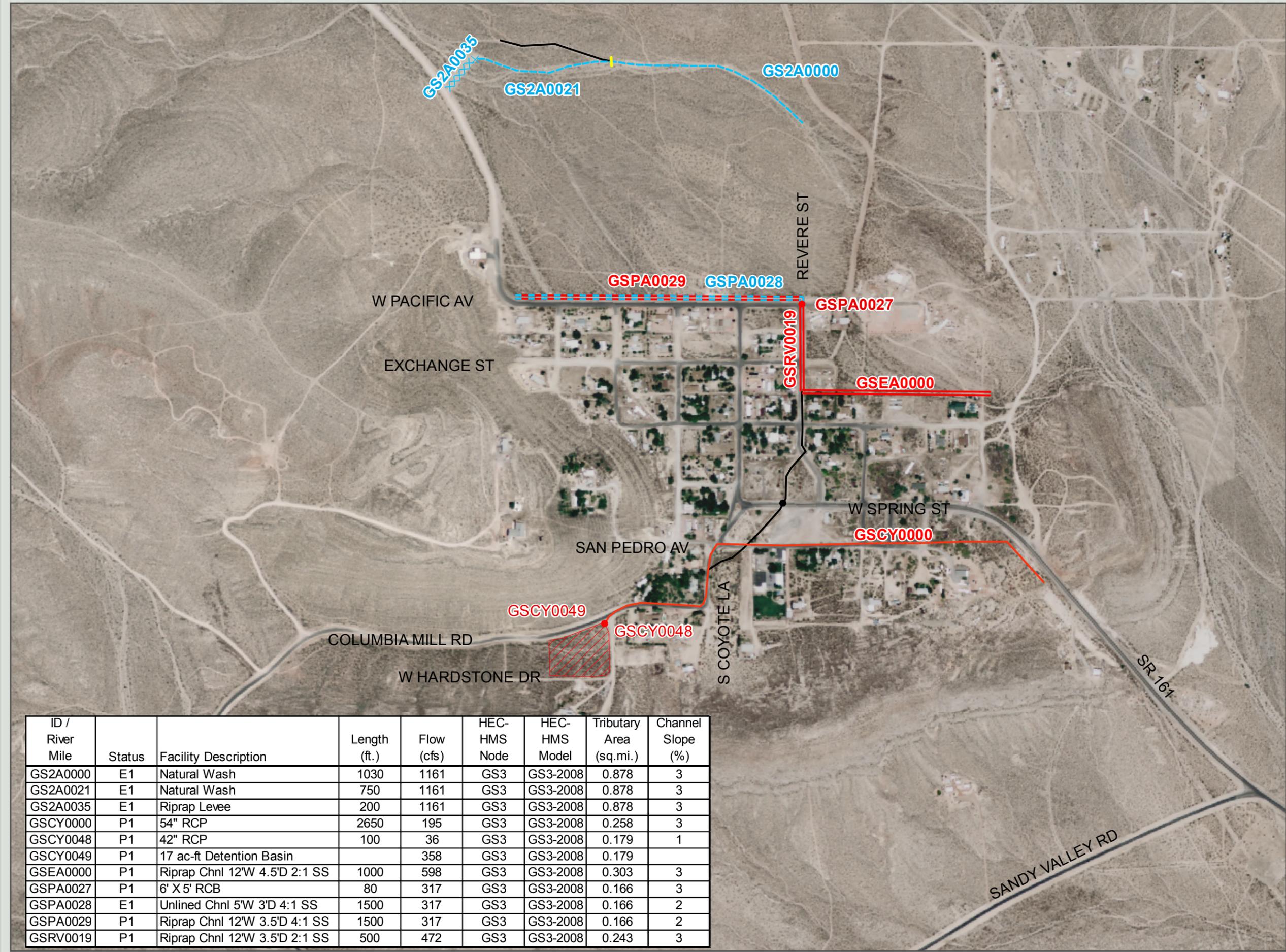
MAP NUMBER
32003C3100 E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

**FIGURE 6
GOODSPRINGS
FLOOD CONTROL FACILITIES**

- LEGEND**
- Existing Facilities
 - Category A Proposed Facilities
 - Local Existing Facilities
 - Local Proposed Facilities
 - Detention Basin
 - Culvert or Bridge Crossing
 - Stormdrain
 - Lined Channel
 - Unlined Channel
 - XXXX Levee/Dike
 - - - - Natural Wash/Floodway
 - |— ID-Mile Separator



ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-HMS Node	HEC-HMS Model	Tributary Area (sq.mi.)	Channel Slope (%)
GS2A0000	E1	Natural Wash	1030	1161	GS3	GS3-2008	0.878	3
GS2A0021	E1	Natural Wash	750	1161	GS3	GS3-2008	0.878	3
GS2A0035	E1	Riprap Levee	200	1161	GS3	GS3-2008	0.878	3
GSCY0000	P1	54" RCP	2650	195	GS3	GS3-2008	0.258	3
GSCY0048	P1	42" RCP	100	36	GS3	GS3-2008	0.179	1
GSCY0049	P1	17 ac-ft Detention Basin		358	GS3	GS3-2008	0.179	
GSEA0000	P1	Riprap Chnl 12'W 4.5'D 2:1 SS	1000	598	GS3	GS3-2008	0.303	3
GSPA0027	P1	6' X 5' RCB	80	317	GS3	GS3-2008	0.166	3
GSPA0028	E1	Unlined Chnl 5'W 3'D 4:1 SS	1500	317	GS3	GS3-2008	0.166	2
GSPA0029	P1	Riprap Chnl 12'W 3.5'D 4:1 SS	1500	317	GS3	GS3-2008	0.166	2
GSRV0019	P1	Riprap Chnl 12'W 3.5'D 2:1 SS	500	472	GS3	GS3-2008	0.243	3



Scale: 1 inch = 500 feet

basin and it has been identified in the “Clark County Regional Flood Control District’s (CCRFCD) Food Control Master Plan Update – 2009 Outlying Areas, Goodsprings”. The tributary area for this drainage basin is approximately 43.38 square miles and the identified flow rate for the 100-year event is 15,056 cfs. Attached from that Study are the following excerpts for Reference:

- Figure 2 that shows the 100-year Flood Zone
- Figure 3 that gives the Hydrologic Summary – Runoff Potential
- Figure 4 that identifies the Hydrologic Parameters – Basin Centroid and Travel Lengths
- Figure 5 – Watershed Map

Based upon this information the flows for the various Subbasins are derived and attached from the CCRFCD Master Plan Update is an excerpt that gives the flows from those Subbasins (See Table 2-2B).

The CCRFCD Master Plan Update did not address any drainage basins south and east of the Goodsprings townsite that may impact the Lower Bird Spring Mountain Trail. Based upon the Trail Study Preferred Alignment Exhibit there is at least one additional wash that may have a significant impact on the trail mentioned above. The scope for this study does not include the Hydrological Study of the Subbasins for the area(s) mentioned but in the future as further development is planned that may be an option.

TRAIL RECOMMENDATIONS

As discussed above there are potential drainage issues that will affect the various trails proposed as part of this trail study. Much of the proposed trails west of Goodsprings will adhere to already established roads, railways alignments, and trails. These trails have been identified as being a natural surface trail. Based upon this it is important that these trails all be sustainable in design and adhere to established standards for sustainable trails (i.e. rolling contour trails). There are five essential elements of sustainable trails and they are as follows:

1. **The Half Rule** – Trails grade should not exceed half the grade of the hillside or sideslope that the trail traverses (i.e. if sideslope is 20% then trail grade should not exceed 10%).
2. **The Ten Percent Average Guideline** – An average trail grade of 10% or less is sustainable.
3. **Maximum Sustainable Grade** – This is the steepest section of the trail greater than 10 feet in length. Typically between 15 to 20 percent.
4. **Grade Reversals** – A spot which a climbing trail levels out and then changes direction, dropping subtly for 10 to 50 linear feet before rising again. This change in grade forces water to exit the trail at the low point created by the grade reversal.

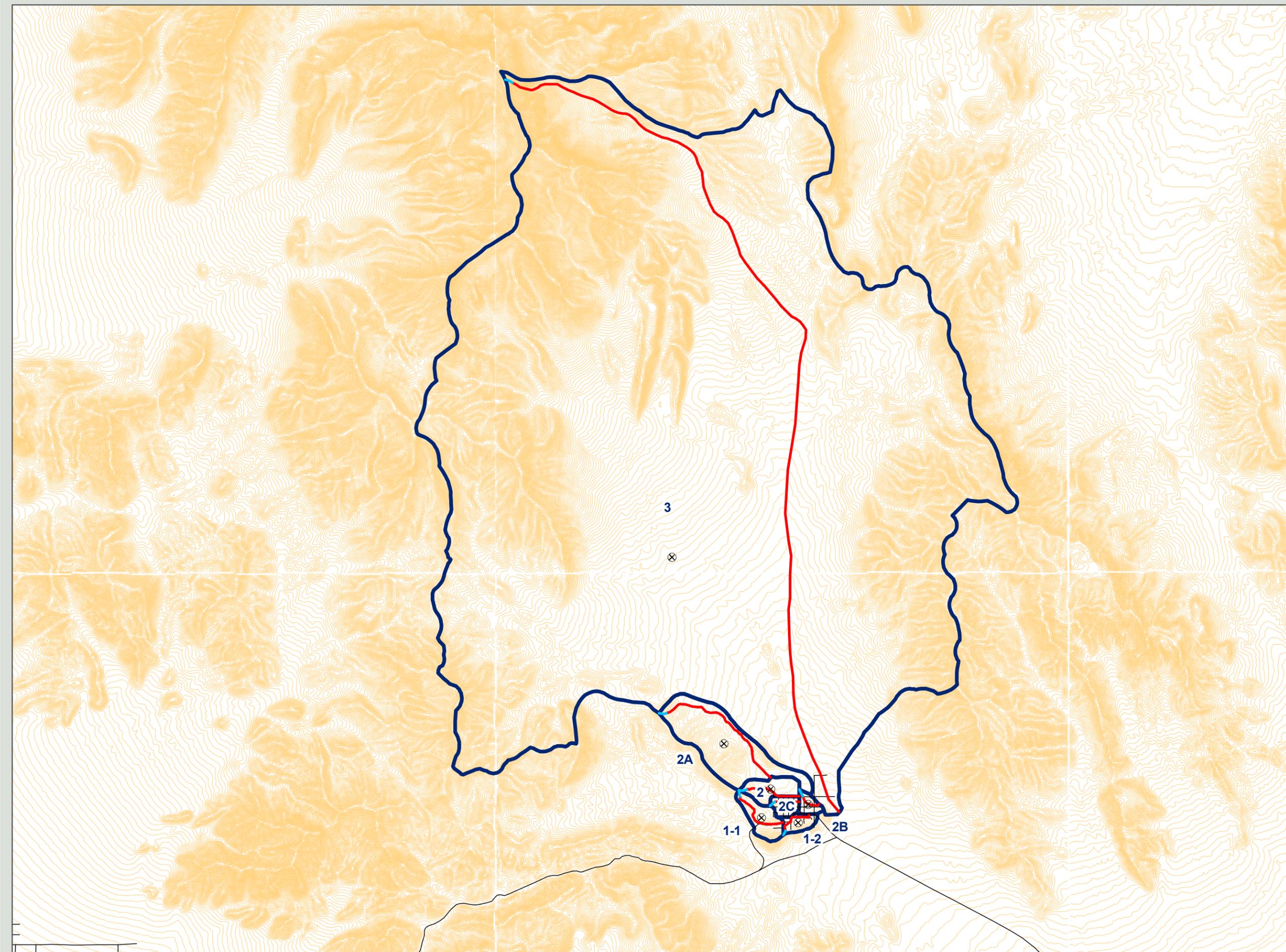


**FIGURE 4
GOODSPRINGS**

HYDROLOGIC PARAMETERS

Legend

- ⊗ Basin Centroid
- Street
- 20' Contour
- Initial Length
- Longest Travel Length
- USBR Travel Length



Scale: 1 inch = 3,000 feet



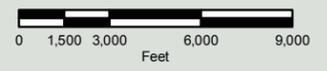
2009
OUTLYING AREA
FLOOD CONTROL
MASTER PLAN UPDATE

**FIGURE 3
GOODSPRINGS**

HYDROLOGIC SUMMARY

LEGEND

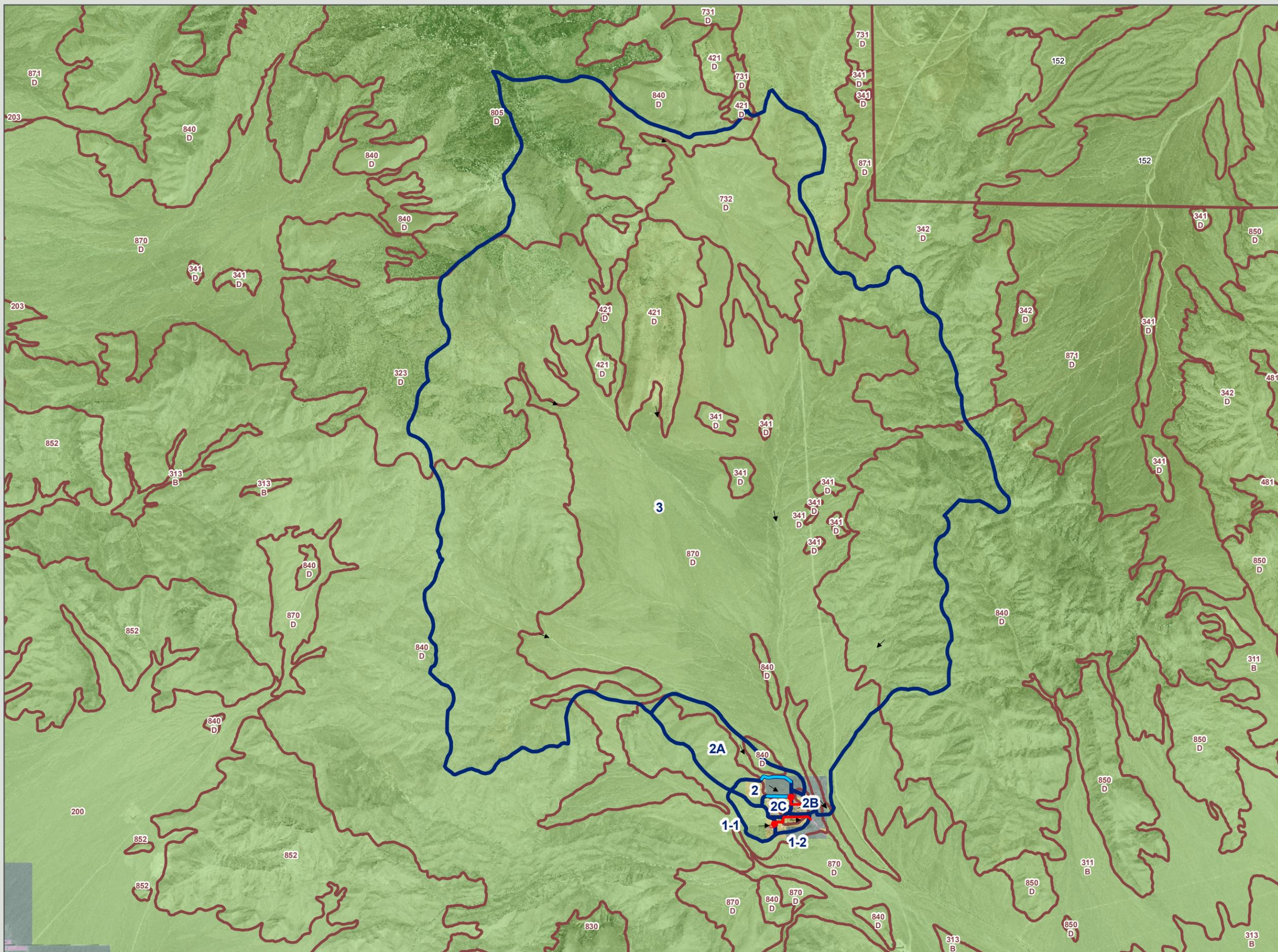
- Subarea Boundary
- Flow Arrows
- Flood Control Facilities**
 - Existing Facilities
 - Proposed Facilities
- Hydrologic Soil Groups**
 - A Low Runoff Potential
 - B Moderately Low Runoff Potential
 - C Moderately High Runoff Potential
 - D High Runoff Potential/Rock Outcrops
- Typical Land Use**
 - 1 Undeveloped Land, Open Desert
 - 2 Parks, Golf Courses
 - 3 Rural
 - 4 Low Density Residential
 - 5 Medium Density Residential
 - 6 High Density Residential
 - 7 Public Facility, Residential
 - 8 Residential
 - 9 Commercial, Retail, Casino, High Rise Condominiums
 - 10 Light Industrial
 - 11 Heavy Industrial
 - 12 Schools
 - 13 Lakes



Scale: 1 inch = 6,000 feet



G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS





2009
OUTLYING AREA
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE 2 GOODSPRINGS

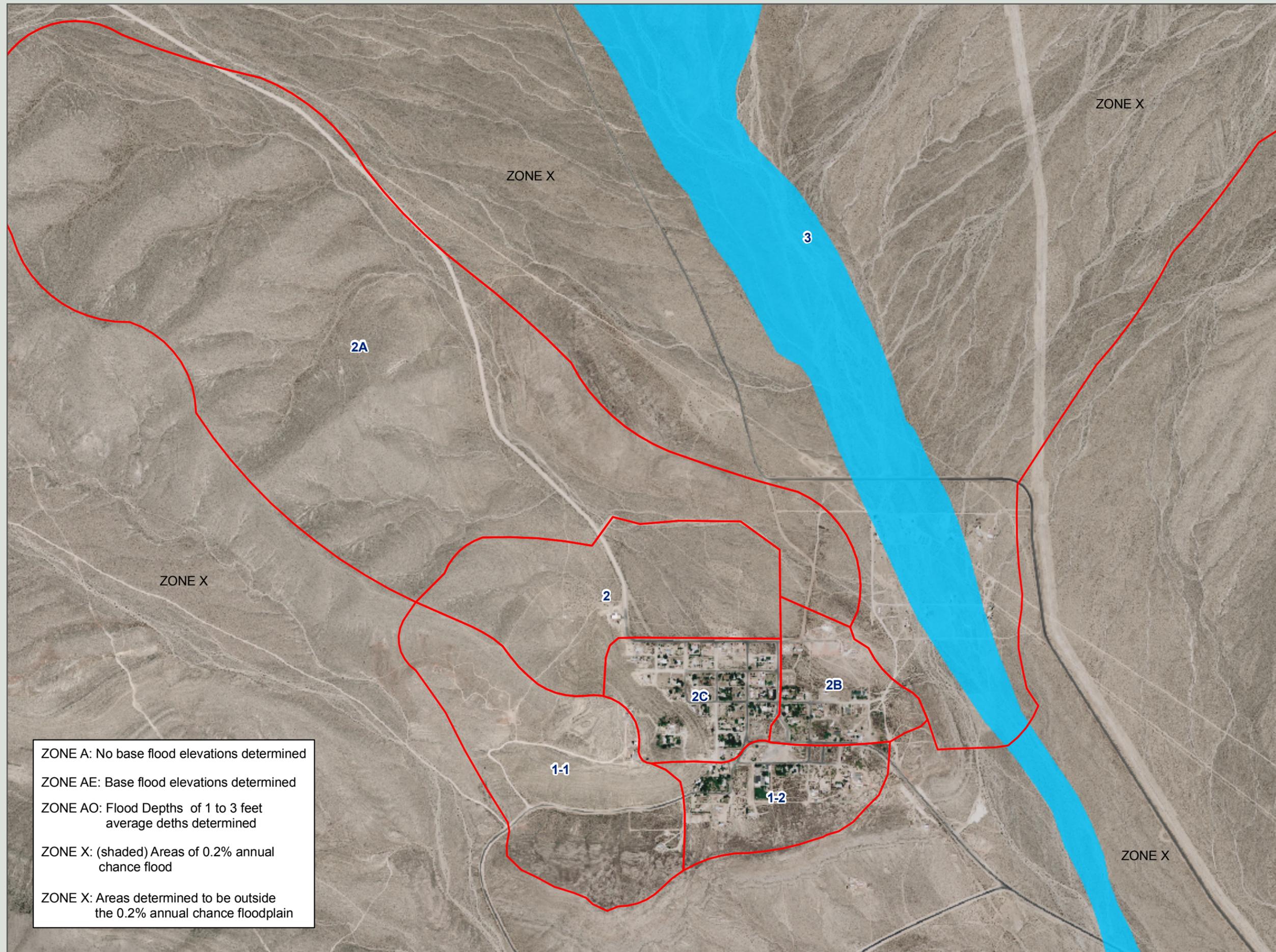
FEMA Flood Hazard Areas

Legend

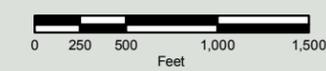
Subarea Boundary

100 Yr Flood Zone

- Zone A
- Zone AE
- Zone AO
- Zone X (shaded)



ZONE A: No base flood elevations determined
ZONE AE: Base flood elevations determined
ZONE AO: Flood Depths of 1 to 3 feet average depths determined
ZONE X: (shaded) Areas of 0.2% annual chance flood
ZONE X: Areas determined to be outside the 0.2% annual chance floodplain



Scale: 1 inch = 1,000 feet



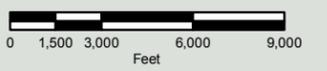
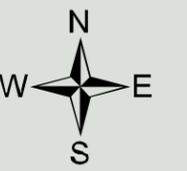
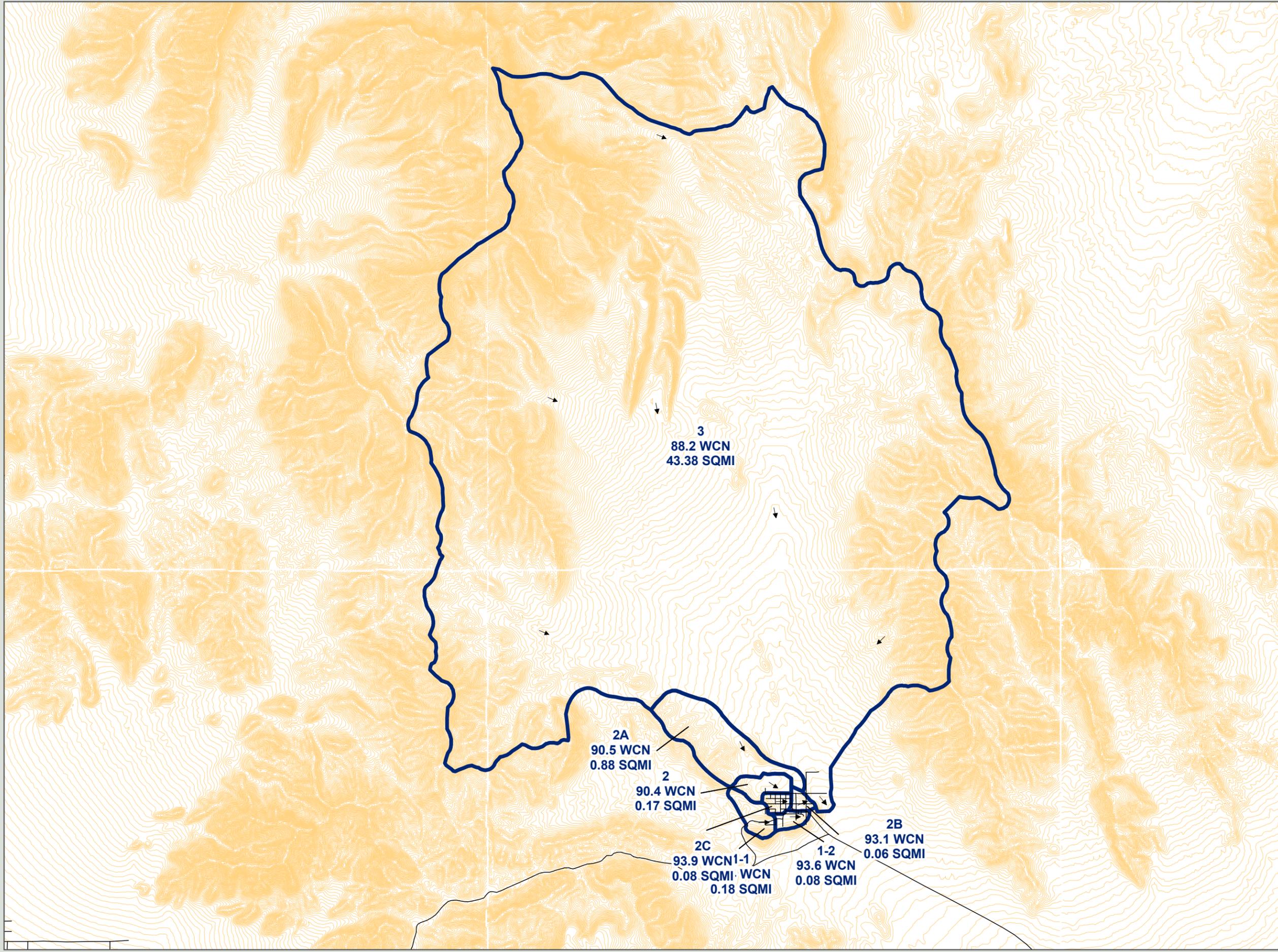


**FIGURE 5
GOODSPRINGS**

WATERSHED MAP

Legend

- ▶ Flow Direction Arrow
- Street
- 20' Contour
- ▭ Subarea Boundary



Scale: 1 inch = 3,000 feet

The smaller of the two calculations for Time of Concentration will control. Minimum T_c for any watershed is 5 minutes.

Concentration Points

Concentration points for the combining of subbasins were chosen to obtain appropriate peak flow rates for individual MPU facilities except where constrained by subbasin size limits.

Table 2-2A summarizes the hydrologic parameters used in the HEC-HMS models.

Subbasin	Area (sq. mi.)	Rainfall (in)	Weighted Curve Number	Lag Time (hrs.)
1-1	0.18	3.43	92.4	0.16
1-2	0.08	3.43	93.6	0.12
2	0.17	3.43	90.4	0.16
2A	0.88	3.43	90.5	0.36
2B	0.06	3.43	93.1	0.12
2C	0.08	3.43	93.9	0.08
3	43.38	3.58	88.2	1.38

*See Figures 3, 4, and 5.

Table 2-2B summarizes the HEC-HMS results for Goodsprings. The flows and tributary areas shown in Table 2-2B are those associated with the maximum peak discharge (i.e., worst case storm centering scenario). The 2003 MPU 100-year flows at corresponding combination points (where applicable) are also included in Table 2-2B for comparison purposes.

Subbasin/ CP	Tributary Area (sq. mi.)	DARF	2009 MPU 100-year Flow (cfs)	2003 MPU* 100-year Flow (cfs)	Notes
1-1	0.18	0.99	358	--	--
1-2	0.08	0.99	168	--	--
2	0.17	0.99	317	--	--
2A	0.88	0.975	1,161	--	--
2B	0.06	0.99	126	--	--
2C	0.08	0.99	190	--	--
3	43.38	0.695	15,056	--	--
C1	0.26	0.99	195	143	Increased Tributary Area/ Higher CNs
C2B	0.30	0.99	598	--	--
C2C	0.24	0.99	472	--	--
GDSPDB	0.18	0.99	36	31	Higher CNs

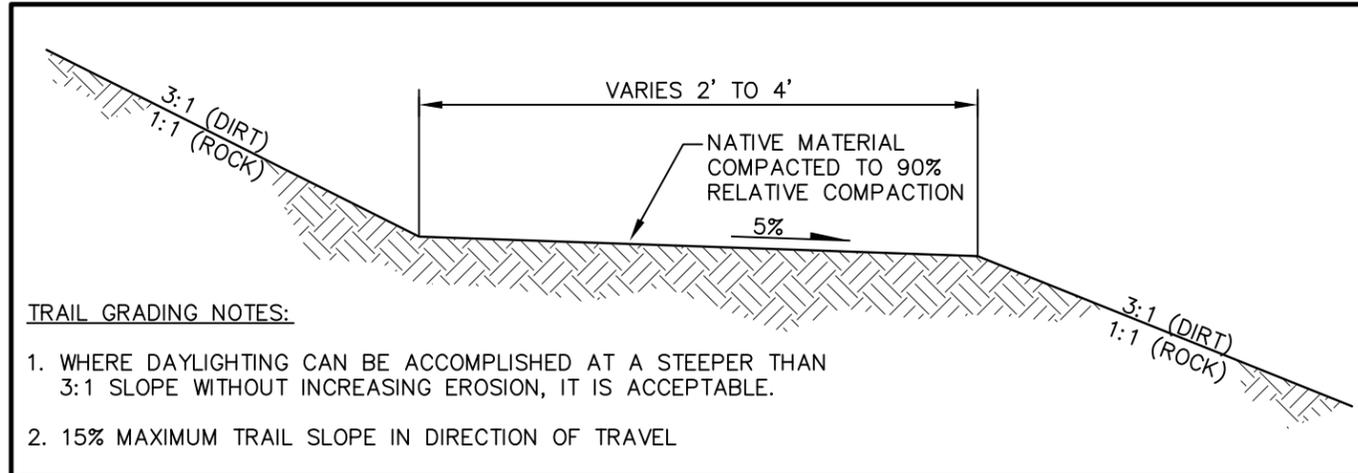
*HEC-1 Model was used for analysis.

5. **Outslope** – This is where the tread of the trail tilts from the high side to the low side (i.e cross slope). This encourages water to sheet flow across the trail thus reducing erosion.

As for the proposed trails east of Goodsprings along with the above mentioned criteria additional design aspects will have to also be looked at. The trails east of Goodsprings will be primarily of two types; paved (multi-use) and natural surface. For the natural surface we will adhere to criteria for sustainable designs with special attention being focused on the areas where the 100-year flood zone is, and other larger washes or arroyos. In these areas the use of concrete cutoff walls, culverts, gabions, etc. **may be** required to lessen the impact that the flows in these areas will have on the trail. A determination of what will be the best will be determined at the time that the trail alignment has been identified and is designed.

As for the potential paved (multi-use) trail the above mentioned criteria for sustainable trails can still be applied but a much closer look at the various aspects needs to occur. The paved trail may be deemed accessible therefore the grades in direction of travel can not exceed five (5) percent and the cross slope not exceed two (2) percent. Additionally with the adding of the impervious material the runoff potential increases so the potential for erosion increases and will have a significant impact. As mentioned above the paved trail will also be crossing the 100-year flood plain and other larger washes or arroyos. In these areas the use of concrete cutoff walls, culverts, gabions, etc. **will be** required to lessen the impact that the flows in these areas will have on the trail.

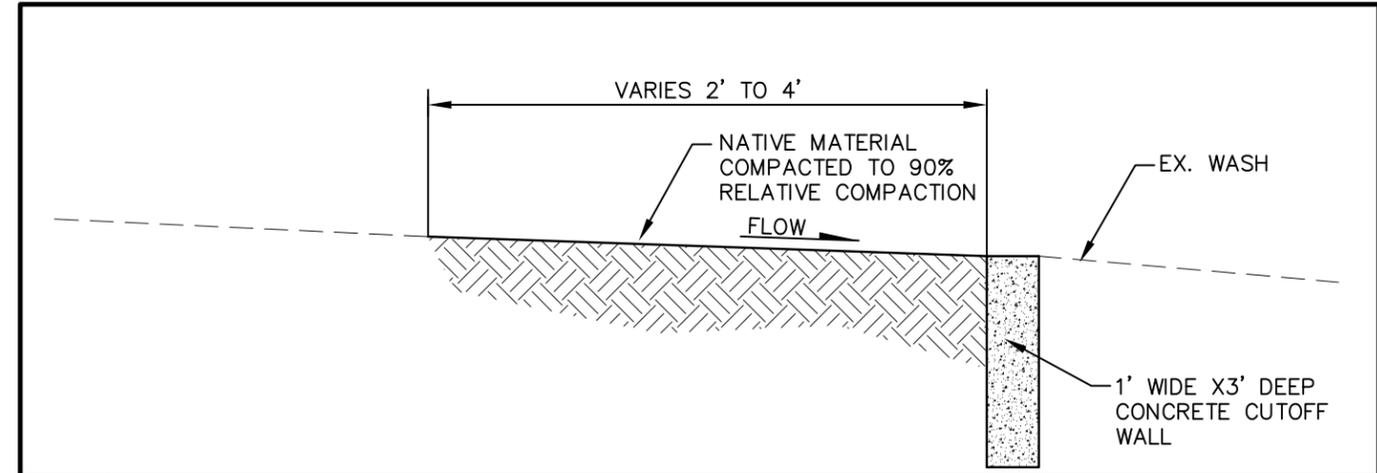
Included are Exhibit A that gives some typically sections for the natural trails at various locations. Exhibit B gives some typically sections for the paved trails at various locations. Based upon these a graphically perspective is conveyed to give a broad idea of what can be expected for these proposed trails.



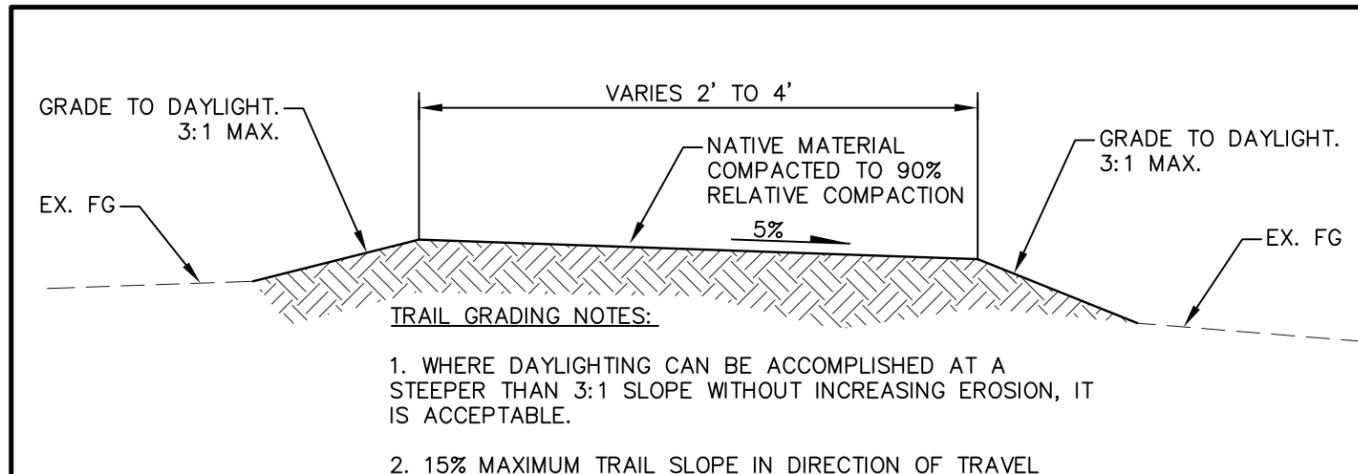
TRAIL GRADING NOTES:

1. WHERE DAYLIGHTING CAN BE ACCOMPLISHED AT A STEEPER THAN 3:1 SLOPE WITHOUT INCREASING EROSION, IT IS ACCEPTABLE.
2. 15% MAXIMUM TRAIL SLOPE IN DIRECTION OF TRAVEL

1 TYPICAL HILLSIDE TRAIL SECTION N.T.S.



3 TYPICAL 100-YEAR FLOOD PLAIN TRAIL SECTION N.T.S.



TRAIL GRADING NOTES:

1. WHERE DAYLIGHTING CAN BE ACCOMPLISHED AT A STEEPER THAN 3:1 SLOPE WITHOUT INCREASING EROSION, IT IS ACCEPTABLE.
2. 15% MAXIMUM TRAIL SLOPE IN DIRECTION OF TRAVEL

2 TYPICAL VALLEY TRAIL SECTION N.T.S.

NATURAL TRAIL SECTIONS

EXHIBIT A

Nevada By Design
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 Las Vegas, NV 89120
 Phone: (702) 838-1525 - Fax: (702) 838-1530
 www.nvbydesign.com

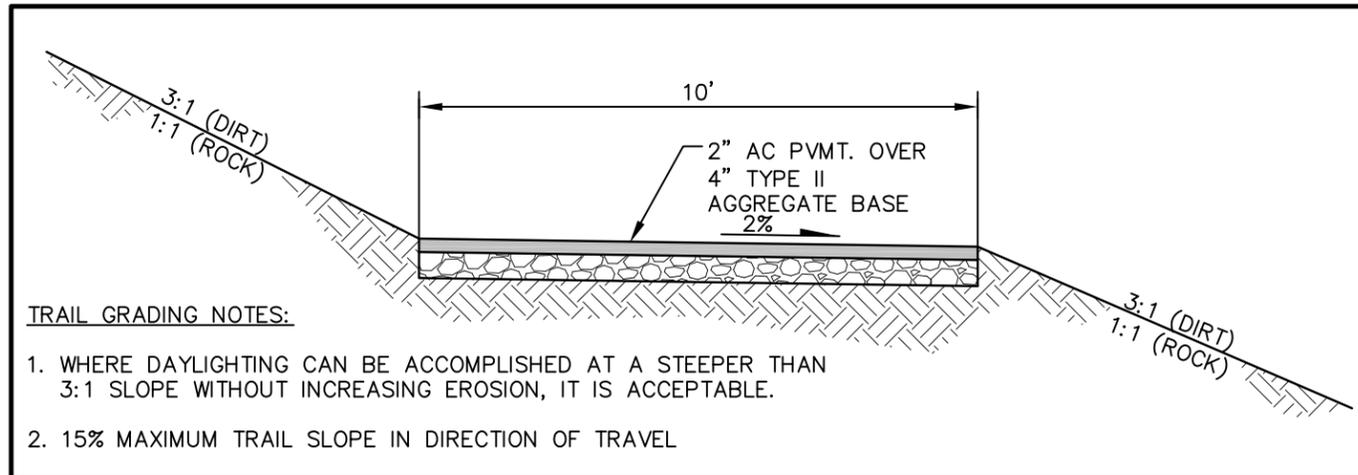


CLARK COUNTY
 500 SO. GRAND CENTRAL PARKWAY
 LAS VEGAS, NEVADA 89155

GOODSPRINGS TRAIL STUDY

DATE: 07/13/09

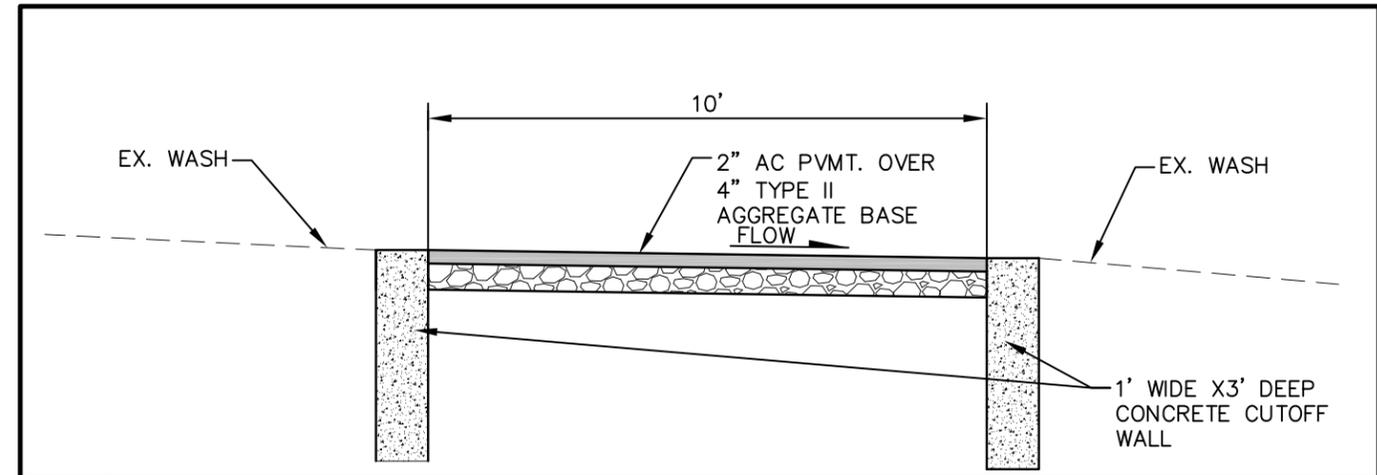
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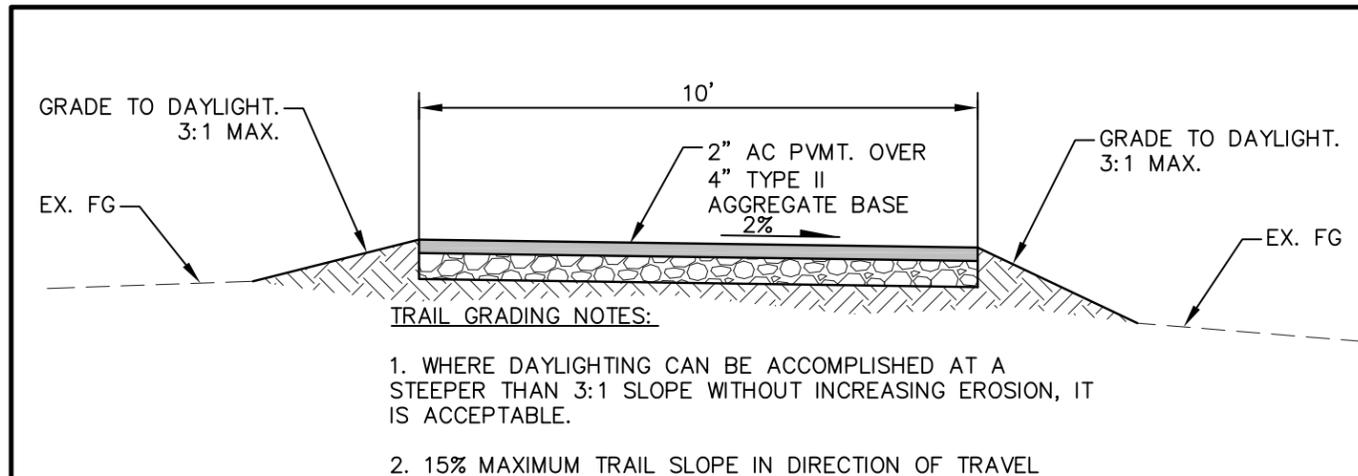
TRAIL GRADING NOTES:

1. WHERE DAYLIGHTING CAN BE ACCOMPLISHED AT A STEEPER THAN 3:1 SLOPE WITHOUT INCREASING EROSION, IT IS ACCEPTABLE.
2. 15% MAXIMUM TRAIL SLOPE IN DIRECTION OF TRAVEL

1 TYPICAL HILLSIDE TRAIL SECTION N.T.S.



3 TYPICAL 100-YEAR FLOOD PLAIN TRAIL SECTION N.T.S.



TRAIL GRADING NOTES:

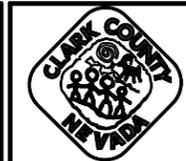
1. WHERE DAYLIGHTING CAN BE ACCOMPLISHED AT A STEEPER THAN 3:1 SLOPE WITHOUT INCREASING EROSION, IT IS ACCEPTABLE.
2. 15% MAXIMUM TRAIL SLOPE IN DIRECTION OF TRAVEL

2 TYPICAL VALLEY TRAIL SECTION N.T.S.

PAVED TRAIL SECTIONS

EXHIBIT B

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CONCLUSIONS AND RECOMMENDATIONS

1. The proposed alignments of the natural and/or paved trails cross a portion of a FEMA designated Special Flood Hazard Zone (Zone A).
2. The proposed alignments of the natural and/or paved trails are adjacent to an existing or proposed Clark County Regional Flood Control District (CCRFCD) Facility. This will require coordination with Clark County Regional Flood Control District and Clark County Public Works to ensure that the trail improvements and/or the flood control improvements will not have a significant impact on each other.
3. The CCRFCD Master Plan Update did not address any drainage basins south and east of the Goodsprings townsite that may impact the Lower Bird Spring Mountain Trail. Based upon the Trail Study Preferred Alignment Exhibit prepared there is at least one additional wash that may have a significant impact on the trail mentioned above. The scope for this study does not include the Hydrological Study of the Subbasins for the area(s) mentioned but in the future as further development is planned that may be an option.
4. There are potential drainage issues that will affect the various trails proposed as part of this trail study. It is important that these trails all be sustainable in design and adheres to established standards for sustainable trails (i.e. rolling contour trails).
5. For the natural surface trail we will adhere to criteria for sustainable designs with special attention being focused on the areas where the 100-year flood zone is, and other larger washes or arroyos. The use of concrete cutoff walls, culverts, gabions, etc. **may be** required to lessen the impact that the flows in these areas will have on the trail. A determination of what will be the best mitigation option will be determined at the time that the trail alignment has been identified and is designed.
6. As for the potential paved (multi-use) trail the above mentioned criteria for sustainable trails can still be applied but a much closer look at the various aspects needs to occur. The paved trail may be deemed ADA accessible therefore the grades in direction of travel can not exceed five (5) percent and the cross slope does not exceed two (2) percent. Additionally with the adding of the impervious material, the runoff potential increases as does the potential for erosion and will have a significant impact. As mentioned above the paved trail will also be crossing the 100-year flood plain and other larger washes or arroyos. In these areas the use of concrete cutoff walls, culverts, gabions, etc. **will be** required to lessen the impact that the flows will have on the trail.

7. Exhibits A and B provide for some generic typical sections for the Natural and Paved Trails.

REFERENCES

Clark County Regional Flood Control District Hydrologic Criteria and Drainage Design Manual, dated August 1999, prepared by WRC Engineering Incorporated and updated by Montgomery Watson

Clark County Regional Flood Control District Flood Control Master Plan Update 2009 Outlying Areas, Goodsprings, dated January 2009, prepared by G.C. Wallace Companies

Flood Insurance Rate Map Number 32003C2186E, effective September 27, 2002, prepared by Federal Emergency Management Agency

Trail Solutions, IMBA's Guide to Building Sweet Single Track, dated 2004, prepared by International Mountain Bicycling Association.