

Final Environmental Assessment

Caliente Flood Control Project

City of Caliente

FEMA: PDMC-PJ-09-NV-2011-002

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FEMA

Federal Emergency Management Agency
Department of Homeland Security
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1.0 INTRODUCTION

The City of Caliente, Nevada (Subapplicant) (Figure 1) has applied through the Nevada Division of Emergency Management (Grantee) to the Federal Emergency Management Agency (FEMA) Region IX Pre-disaster Mitigation Grant (PDM) Program for funding to construct a settling basin, reconstruct approximately 0.5 mile of paved roadway to include storm drains and gutters, and provide a sediment disposal site to alleviate flooding problems caused by high magnitude storm events to the City of Caliente. FEMA proposes to provide Federal financial assistance pursuant to Section 203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act to the Nevada Department of Public Safety, Division of Emergency Management Homeland Security (NDEM) who would then obligate funds to the City of Caliente.

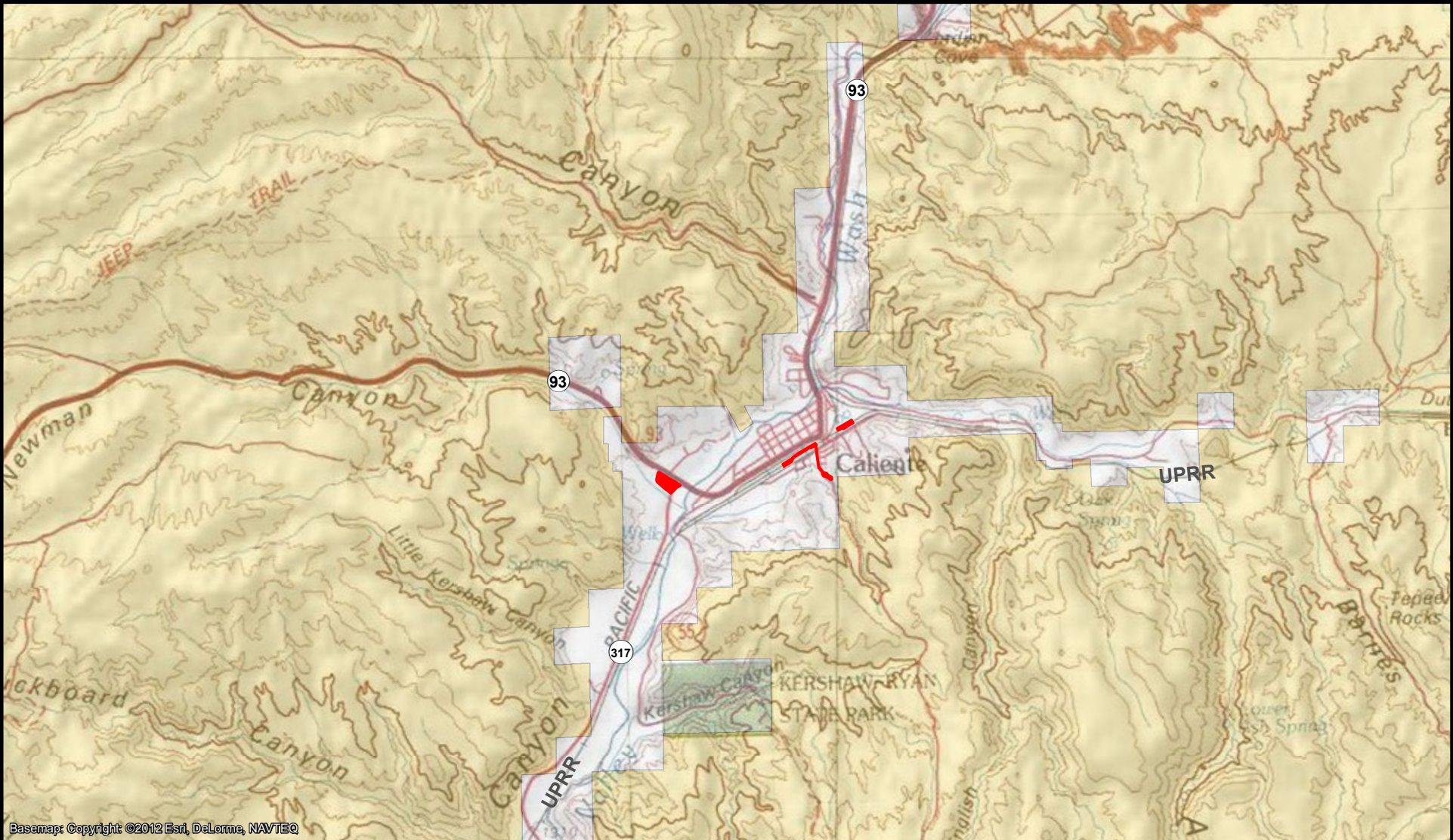
FEMA has prepared this Environmental Assessment (EA) to evaluate the potential impacts of the proposed flood control project. This EA has been prepared according to the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500–1508), and FEMA’s implementing regulations (44 CFR Part 10).

The environmental review process provides steps and procedures to evaluate the potential environmental, social, and economic impacts of the subapplicant's proposed flood control project and a range of reasonable alternatives, as well as an opportunity for the public and local, state, and other Federal agencies to provide input through a public comment period. These potential impacts are measured by their context and intensity, as defined in the CEQ regulations.

2.0 PURPOSE OF AND NEED FOR ACTION

The Spring Heights area in Caliente has a history of flooding and related damage. The purpose of the Federal action is to respond to a PDM program funding request by the City of Caliente for a flood control project to address this ongoing problem. The existing Spring Heights Drive roadway cross section can generally be described as a standard 2 percent crowned road with curb and gutter on both sides. This type of roadway routes runoff water to the flow line of the curb; when the capacity of the curb is exceeded, storm water overtops the curb and flows onto adjacent private property. In addition, the existing curb includes numerous curb cuts, which further reduces the roadway's flood water carrying capacity. The primary objective of the flood control project is to reduce the recurrence interval of damage-causing flood events by increasing the flood carrying capacity of the roadway and downstream storm water system, to lessen the damage caused by flood events, and to reduce the post-flood cleanup work.



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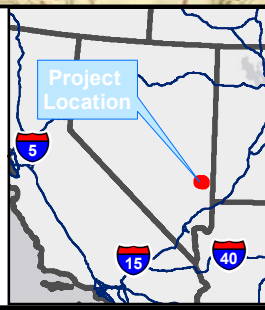
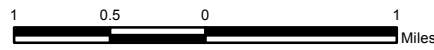


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 Project Components

NAME

-  Bureau of Land Management
-  Private



SUNRISE ENGINEERING
CALIENTE SPRING HEIGHTS FLOOD CONTROL

**FIGURE 1
PROJECT LOCATION**



DRAWN BY	ST	DATE DRAWN	4/17/2013
SCALE	1 in = 1 miles		
PROJECT	B.A13068.00		

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3.0 ALTERNATIVES ANALYSIS

3.1 Alternatives Considered and Dismissed

NEPA CEQ's regulations require an investigation and evaluation of reasonable alternatives as part of the Environmental Assessment process. One alternative was considered but was dismissed from further analysis because, although it would generally meet the purpose of and need for the project, it would result in greater overall environmental impact than the proposed project.

Upstream detention basin

A detention basin located higher upslope of the proposed location was considered. Construction of an upstream detention basin would essentially consist of constructing a dam within the limits of the ephemeral wash from one side of the canyon wall to the other. This structure would fall under the jurisdiction of the Nevada Division of Water Resources Dam Safety program and would require proper permitting and adherence to dam safety design requirements. Due to its nature, a "flood control" dam is categorized as a high hazard dam and must be sized to detain any runoff exceeding that of specified storm duration (normally a 25-year flood). This storage requirement would result in disturbance of a significantly larger area. In addition, the design would need to incorporate a solution to maintain the existing access road running up the canyon. This could be accomplished by either cutting into the side slope of the canyon far enough upstream of the dam to provide a gradual slope to the dam crest or by constructing the downstream slope of the dam face at a mild enough slope that the access road could be constructed on the face of the dam itself. Either of these options would significantly increase the disturbance area of this alternative. This alternative, although it would meet the purpose of and need for the project, would result in substantially more environmental impact than the proposed project. In addition, property administered by the U.S. Department of Interior, Bureau of Land Management (BLM) would need to be acquired for the detention basin. For these reasons this alternative was dismissed.

3.2 Alternative 1 - No Action

Inclusion of a No Action alternative in the environmental analysis and documentation is required under CEQ regulations. The No Action alternative is defined as maintaining the status quo with no FEMA funding for any alternative action. The No Action alternative is used to evaluate the effects of not providing eligible assistance for the proposed project, thus providing a benchmark against which "action alternatives" may be evaluated. For the purpose of this alternative, it is assumed that the Spring Heights area in Caliente would continue to flood and experience on-going private property damage and post-flood cleanup of properties and the roadway.







3.3 Alternative 2 – Spring Heights Flood Control Proposed Project

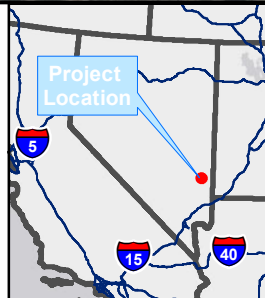
The proposed project includes reconstruction of Spring Heights Drive to an inverted crown for conveyance of storm water runoff, construction of an upstream settling basin, and improvements to the storm drain system to remove a portion of the runoff water from the surface near the intersection of Spring Heights and Clover Street. A temporary staging area would be set up on the northeast end of Caliente during the construction phase (Figure 2).

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Basemap, Copyright ©2012 Esri, DeLorme, NAVTEQ

-  Buried 42"-48" Storm Drain
-  Disturbance Area For Settling Basin
-  Reconstructed Paved Road With Center Gutter
-  Sediment Disposal Site
-  Staging Area
-  Inactive Stick Nest



SUNRISE ENGINEERING
CALIENTE SPRING HEIGHTS FLOOD CONTROL

FIGURE 2
STUDY AREA



DRAWN BY	ST	DATE DRAWN	4/17/2013
SCALE	1 in = 824.65 feet		
PROJECT	B.A13068.00		

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Road reconstruction

The proposed project would reconstruct 0.5 miles of roadway (Spring Heights Drive) to an inverted crown design and improve the curbs and gutter to maximize its surface water carrying capacity (Figure 2). The road reconstruction would include roto-milling approximately 34,500 square feet (sf) of existing pavement, preparation of the roadway subgrade, construction of approximately 1,050 sf of concrete valley gutter, 4,000 sf of concrete sidewalk, 2,200 sf of concrete curbing, 29,500 sf of hot mix bituminous surfacing, and 6,200 sf of gravel surfacing.

Upstream settling basin

Much of the cleanup work following flood events in the Spring Heights area is attributed to the deposition of sediment and debris along the roadways and properties along Spring Heights Drive. At the south end of Spring Heights Drive (up-gradient end) the paved road turns to a graded gravel road that was constructed in the bottom of a ravine - this ravine provides surface water drainage from the adjacent mountains. To reduce the amount of deposited materials along the roadway and nearby properties during floods, the proposed project would include an upstream settling basin to settle out a portion of the rocks, large sediments, and debris (Figure 2). The settling basin would be 6 feet deep and would have a volume of approximately 1,200 cubic yards (cy). The settling basin would require reinforced concrete structures and slab work. It would be cleaned out as needed by the City. The sediment would be deposited in a disposal area located on the west side of Caliente on city property adjacent to US Highway/State Road SR-93. The City plans to develop the disposal site into an industrial area in the future.

Improvements to storm drain system

The improved storm drain system would include approximately 1,450 linear feet (lf) of steel reinforced high-density polyethylene (HDPE) pipe with associated storm drain manholes and street width inlets. Two roadway-width drainage inlets would be constructed at the bottom of Spring Heights Drive which would direct storm water runoff into a new 42- to 48-inch diameter storm drain which would be buried within Clover Street. The storm drain system would terminate into an existing open drainage channel located west of City Hall along the north margin of Clover Street (Figure 2). The improved storm drain design would accommodate a 50 year storm frequency with 6 hour duration and a peak storm runoff of 195.75 cubic feet per second (cfs). There would be approximately 13,000 sf of hot mix bituminous surfacing required for roadway patching along the new storm drain alignment. The storm drain system would continue to terminate at an existing drainage ditch west of City Hall and north of Clover Street.

4.0 AFFECTED ENVIRONMENT, IMPACTS, AND MITIGATION

The following resource categories are either not present in the project area or are not applicable to the proposed flood control project, and therefore are not analyzed in this EA:

Wild and Scenic Rivers
Coastal Resources
Land Use and Zoning

Important Farmland
Hazardous Materials

The following sections provide a description of the affected environment, impacts, and mitigation associated with resources that may be affected by the proposed project.

4.1 Geology and Soils

4.1.1 Affected Environment

The project area occurs within the Central Nevada Basin and Range physiographic province. The dominant landforms are north-south trending mountains separated by broad, sediment filled valleys, many of which have internal drainages. Mountains were formed by faulting and were subsequently modified by erosion. Large alluvial fans have developed at the mouths of most canyons. Undifferentiated volcanic rocks from the Miocene and Oligocene epochs occur in this section. Rhyolites and andesites also occur. Sedimentary rocks from the Miocene-Pliocene epoch, along with rocks from the Pennsylvanian period, are found, and limestone and dolomite from the Cambrian period occur. Intrusive igneous rocks form many of the mountain ranges. Playas are also evident in the internally drained valleys. Alluvial deposits, including sand dunes, occur in many of the valleys. Bedrock in the area has been eroded by Meadow Creek and Clover Creek.

The Caliente area is underlain by approximately 200 feet thick alluvial deposits (Tschanz and Pampeyan 1970, Phoenix 1948). These deposits consist of clay, silt, sand, and gravel. Two main soil types are associated with the project features. The road reconstruction, storm drain improvements, and sediment disposal area would occur on the Geer fine, sandy loam. This relatively thick (greater than 80 inches), alluvial soil is derived from welded tuff and/or reworked lacustrine deposits. It is characterized by flat topography (0 to 2 percent slopes), is dry and well drained, and can become prime farmland if irrigated (NRCS 2013). The upstream settling basin would be constructed on Stewval-Gabbvally association soils, which includes those formed from colluvium derived from volcanic rock, over residuum weathered from volcanic rock. These soils are found along mountains and are characterized by a thin layer of very gravelly fine sandy loam over very gravelly loam (NRCS 2013). Percolation tests of the soil at the settling basin site demonstrated that the drainage rate is 1 minute per inch, which indicates adequate drainage. Unweathered bedrock is found at an average depth of 10 to 14 inches. The soils associated with the settling basin and sediment disposal site have been previously disturbed by Tower Road and farming, respectively. The foothills and mountains above the project area, which contribute the majority of the sediment during flood events, are also comprised of Stewval-Gabbvally association soils (NRCS 2013).

Caliente is located at the confluence of the Meadow Valley Wash and Clover Creek. Meadow Valley Wash is an area of sediment deposition through the town of Caliente. Flood events deposit coarse grey sand and fine gravel throughout its flood zone. The lower section of the wash contains large gravel bars near the intersection of SR 317 and the railroad overpass, which were the result of previous flood events.

4.1.2 Alternative 1 - No Action

Under Alternative 1, the flood control project would not be constructed and flood events would continue to convey large amounts of eroded material from the adjacent foothills and mountains onto the project roadways and private property.

4.1.3 Alternative 2 – Spring Heights Flood Control Proposed Project

Under Alternative 2, erosion from the mountains would still occur during storm events but much of the material would be captured in the settling basin at the head of Spring Heights Drive. The settling basin would not eliminate all sediment and debris from being deposited downstream, especially during storm events of a longer duration. The longer the duration of a flood event, the more likely the settling basin would exceed its capacity. However, private property would experience less damage and the clean up after flood events would be reduced. Periodically, the City of Caliente would clean out the settling basin and move the material to the disposal site on the west side of the city adjacent to SR 93. This would cap the native soils with material eroded from the foothills and mountains; however, this site has previously been disturbed by farming. However, farming has not taken place on the proposed disposal site for many years. Therefore, the new disturbance would be negligible.

4.1.4 Mitigation

There is no mitigation related to geology and soils proposed.

4.2 Seismicity

4.2.1 Affected Environment

The City of Caliente is located in a relatively seismically quiet region; with noticeable earthquakes felt less than once per few decades. There is a 25 to 30 percent probability of an earthquake with a magnitude of greater than 5.0 (Richter scale) occurring within the next 20 years (USGS 2009a), and only a 4 to 6 percent probability of an earthquake with a magnitude of greater than 6.0 occurring within the next 20 years (USGS 2009b).

4.2.2 Alternative 1 - No Action

There would not be any impacts related to seismicity under Alternative 1.

4.2.3 Alternative 2 – Spring Heights Flood Control Proposed Project

There would be a negligible risk of earthquake damage to the improved roadway, settling pond, and improved storm drain system. The project area is not in an area that is seismically active or with the potential for high magnitude earthquakes that could significantly damage infrastructure.

4.2.4 Mitigation

There is no mitigation related to seismicity proposed.

4.3 Water Quality and Hydrology

4.3.1 Affected Environment

The project area is in the Colorado River watershed. There are no perennial, intermittent, or ephemeral surface water sources within the project area. The closest surface water sources are Clover Creek and Meadow Valley Wash which run west and south, respectively, before they join together and then flow through the City of Caliente in a southwestern direction. A meander of a wash becomes evident approximately 350 feet south of the proposed settling basin outside of the existing road prism for a few feet before it is truncated by the road.

Currently, storm drain water flows from the storm drain outflow west of City Hall adjacent to Clover Street in an open, vegetated channel. Discharged storm water drains down into alluvial material (goes subsurface) before it reaches the confluence with Meadow Valley Wash, and there is no evidence of a hydrologic connection between the channel and Meadow Valley Wash.

The proposed sediment disposal site would be located adjacent to Newman Canyon Wash, which runs south along SR 93 through Newman Canyon. The wash is deeply incised (approximately 6 feet) adjacent to the proposed sediment disposal site. A relic farm ditch runs through the disposal site; however, this ditch is no longer used to convey water.

4.3.2 Alternative 1 - No Action

There would not be any changes to water quality or hydrology as a result of Alternative 1. Surface water runoff would continue to overtop the roadway at Spring Heights and Clover Street during flood events.

4.3.3 Alternative 2 – Spring Heights Flood Control Proposed Project

There would not be any changes to water quality or hydrology under Alternative 2, but storm water would be more adequately captured and controlled by the flood control improvements. The improvements to the roadway would increase the roadway's capacity to carry flood water and convey it to the storm drain system. The improved storm drain system is designed to accommodate the 50-year/6 hour storm event with a peak runoff of 196 cfs. For storms within these parameters, storm water would be conveyed through the storm drain system without overflowing out of storm drains and would be discharged to the drainage channel located west of City Hall along Clover Street. Storms greater than these parameters would likely overflow the storm drain system. Surface disturbance related to construction would not result in impacts to water quality or hydrology.

The proposed sediment disposal site would not affect Newman Canyon Wash. The wash is deeply incised and flood flow through the wash is unlikely to overtop the banks. Therefore, it is unlikely that sediment from the site would reach Newman Canyon Wash.

4.3.4 Mitigation

There is no mitigation related to water quality and hydrology proposed.

4.4 EO 11998 - Floodplain Management

4.4.1 Affected Environment

EO 11988 requires federal agencies to take action to minimize occupancy and modification of floodplains. Furthermore, EO 11988 requires that federal agencies proposing to fund a project sited in the 100-year floodplain must consider alternatives to avoid adverse effects and incompatible development in the floodplain. FEMA's regulations implementing EO 11988 are codified at 44 CFR Part 9.

The City of Caliente is almost entirely built within the 100 year floodplain (FEMA 2010), and the city participates in FEMA's National Flood Insurance Program (NFIP). Thus the City of Caliente has promulgated and enforces a floodplain ordinance at least as stringent as the NFIP and its implementing regulations (44 CFR Parts 59 through 77). Furthermore, FEMA has published a Flood Insurance Rate Map (FIRM) for the City of Caliente. Spring Heights and the intersection with Clover Street are in the Zone X floodplain, which indicates an area that is within the 500-year floodplain or an area having 0.2% annual chance of flooding. The area of the settling basin is upslope and outside of Zone X. However, due to alluvial soils with little vegetation cover on the surrounding hills and the impermeable pavement surface of Spring Heights the site of the settling basin and Spring Heights is known to be subject to more frequent flooding during high magnitude storm events.

The proposed sediment disposal site is on uplands outside of the 500 year floodplain and is not in an area prone to flooding (FEMA 2010).

4.4.2 Alternative 1 - No Action

Alternative 1 would not modify the floodplain in the vicinity of the project. Flooding due to high magnitude storm events would occur at least every five years as it has done historically. The structures currently located within the 100 – 500 year floodplain that Spring Heights and Clover Street are located within would continue to experience flood damage as the current conditions.

4.4.3 Alternative 2 – Spring Heights Flood Control Proposed Project

The primary objective of the proposed project is to reduce the recurrence interval of damage-causing flood events, to lessen the damage caused by flood events, and to reduce the post-flood cleanup work to existing developments. The improved roadway design is a modification of the existing roadway that is located within the 500 year floodplain. The proposed redesigned roadway is engineered to accommodate flooding from high magnitude storm events without a negative impact down gradient on the 100 year floodplain along Clover Street. Sediment deposition and damage of the 500 year floodplain along Spring Heights and Clover Street would be reduced by the construction of the settling basin up gradient outside of the 500 year floodplain. The proposed project would also modify the 100 year floodplain along Clover Street with the installation of the buried storm drain pipe. However, the location of the storm drain

outfall is approximately 4,300 linear feet away from Meadow Valley Wash thus allowing storm flows to infiltrate the alluvium floodplain thereby utilizing the floodplain for natural water purification, velocity reduction, and nutrient cycling. Flood events from the adjacent foothills and mountains would occur as frequently as it has in the past, but the stormwater would be more adequately captured and controlled by the improved roadway and storm drain system.

A summary of the Eight-Step Decision Making Process completed for this project is provided in Appendix F. The objectives of this process are to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. It was determined that the floodplain would not be negatively impacted by the proposed project, and Alternative 2 complies with EO 11988 and 44 CFR Part 9. The City of Caliente would ensure that the project does not indirectly support floodplain development by ensuring that future building permits comply with the local floodplain ordinance.

4.4.4 Mitigation

The proposed project is to mitigate existing anthropogenic impacts on the 500 year floodplain along Spring Heights and the 100 year floodplain along Clover Street by an engineered floodway to accommodate flood events. The proposed project serves as mitigation of the existing impacts to the floodplain.

4.5 EO 11990 - Protection of Wetlands

4.5.1 Affected Environment

EO 11990 requires Federal agencies to take action to minimize the destruction or modification of wetlands by considering both direct and indirect impacts to wetlands. Furthermore, EO 11990 requires that Federal agencies proposing to fund a project that could adversely affect wetlands must consider alternatives to avoid such effects. FEMA's regulations implementing EO 11990 are codified at 44 CFR Part 9.

No wetlands or waters of the US are present within the project area, or within the discharge area of the storm drain system. Currently, storm drain water flows from the storm drain outflow west of City Hall into a drainage ditch that runs along Clover Street. Storm water goes subsurface into the alluvial material before the ditch joins Meadow Valley Wash (a water of the US); therefore, the storm water from the project area does not normally enter Meadow Valley Wash.

4.5.2 Alternative 1 - No Action

Alternative 1 would not affect any wetlands or waters of the US.

4.5.3 Alternative 2 - Spring Heights Flood Control Proposed Project

Alternative 2 would not affect any wetlands or waters of the US. The US Army Corps of Engineers (USACE) has determined that Alternative 2 would "not result in the discharge of dredged or fill material within waters of the United States" (USACE 2013). Alternative 2 would comply with EO 11990 and 44 CFR Part 9.

4.5.4 Mitigation

There is no mitigation related to wetlands proposed.

4.6 Biological Resources

4.6.1 Affected Environment

All areas of proposed surface disturbance have previously been disturbed. Of the four project elements (road improvements, storm drain improvements, settling basin, and sediment disposal site), only the sediment disposal site is substantially vegetated. No state listed noxious plants (NDA 2005) occur in any of these areas. The sediment disposal site is dominated by kochia (*Kochia prostrata*) and Russian thistle (*Salsola kali*) (tumbleweed). Some native rabbit brush (*Ericameria nauseosa*) is located along the relic ditch banks. This site appears to have been historically used for hay production. No riparian vegetation is associated with Newman Canyon Wash.

A list of wildlife and plant species observed within the project area is provided as **Table 4.66-1**.

Table 4.66-1. Species recorded within the project area.

Mammals	
Cottontail rabbit	<i>Sylvilagus nuttallii</i>
Pack rat (sign)	<i>Neotoma sp.</i>
Mule deer	<i>Odocoileus hemionus</i>
Domestic dog	<i>Canis lupus</i>
Birds	
Chirping sparrow	<i>Spizella passerina</i>
Canada goose	<i>Branta canadensis</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Turkey vulture	<i>Cathartes aura</i>
Rock wren	<i>Salpinctes obsoletus</i>
Mourning dove	<i>Zenaida macroura</i>
Raven	<i>Corvus corax</i>

Plants	
Yarrow	<i>Achillea millefolium</i>
big sage	<i>Artemisia tridentata</i>
4 wing salt brush	<i>Atriplex canescens</i>
cheat grass	<i>Bromus tectorum</i>
Indian paintbrush	<i>Castilleja chromosa</i>
rabbitbrush	<i>Ericameria nauseosa</i>
squirrel tail	<i>Elymus elymoides</i>
green ephedra	<i>Ephedra viridis</i>
broom snakeweed	<i>Gutierrezia sarothrae</i>
stansbury cliffrose	<i>Purshia stansburiana</i>
bitter brush	<i>Purshia tridentata</i>
tumbleweed	<i>Salsola tragus</i>
tumble mustard	<i>Sisymbrium altissimum</i>
globemallow	<i>Sphaeralcea coccinea</i>
Kochia	<i>Kochia prostrata</i>
needle and thread	<i>Stipa comata</i>

4.6.2 Alternative 1 - No Action

There would not be any impacts to general biological resources under Alternative 1.

4.6.3 Alternative 2 – Spring Heights Flood Control Proposed Project

The construction of the settling basin and use of the sediment disposal site would permanently remove vegetation in these areas. The plant species observed in the project area are common; therefore, this impact would be negligible. There would be temporary impacts to wildlife species during construction related to noise disturbance. These noise impacts would be negligible because there is already a moderate level of disturbance in the project area due to area residences, businesses, and vehicle traffic.

4.6.4 Mitigation

There is no mitigation related to general biological resources proposed.

4.7 Endangered and Threatened Species

4.7.1 Affected Environment

Section 7 of the Endangered Species Act (ESA) requires Federal agencies to insure that any action authorized, funded, or carried out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. To determine the potential for Federally-listed threatened, endangered, proposed, or candidate species or designated critical habitat to occur in the project area, the Nevada US Fish and Wildlife Service (USFWS) website was consulted for the current status of species

(USFWS 2012). The current list of state sensitive species was also reviewed (NNHP 2013). There were no proposed species identified in Lincoln County. For all the of Federally-listed threatened, endangered or candidate; or state sensitive species present in Lincoln County; the project area is either 1) clearly outside of the known geographic or elevational range of the species or 2) does not contain habitat characteristics known to support the species (Table 4.77-1).

Table 4.77-1. Special status species analyzed for this project.

SPECIES <i>Scientific Name</i>	STATUS	SUITABLE HABITAT	RATIONAL
Birds			
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	E- Federal	No	No suitable riparian habitat within project area.
Greater Sage Grouse <i>Centrocercus urophasianus</i>	C- Federal	No	The project area is outside known distributional range and does not contain suitable sagebrush habitat.
Western Yellow-billed Cuckoo <i>Coccyzus americanus</i>	C- Federal	No	The project area does not support suitable riparian habitat. In the west, habitat generally contains tall cottonwoods and willows in at least 25-acre patches.
Desert tortoise <i>Gopherus agassizii</i>	T - Federal	No	Soils not suitable for burrowing animals. No burrows discovered during site survey. Project area outside of tortoise elevational range.
Golden Eagle <i>Aquila chrysaetos</i>	S - State Migratory	Foraging	Potential migration or foraging habitat. No suitable nest sites discovered within ½-mile of project area. None discovered during survey.
Bald Eagle <i>Haliaeetus leucocephalus</i>	S - State Migratory	Potential upland winter foraging habitat	No lakes within 1 mile of the project area. No suitable nest sites discovered within ½-mile of project area. None discovered during survey.
Burrowing Owl <i>Athene cunicularia hypugaea</i>	S – State	No	No burrows or individuals discovered during survey of the project area.
Peregrine Falcon <i>Falco peregrines anatum</i>	S - State Migratory	Migration range.	Limited cliff habitat within ½-mile of the project area. No individuals or nests discovered during survey.
Ferruginous Hawk <i>Buteo ragalis</i>	S - State	No	Very limited nesting habitat within ½-mile of project area. None discovered during survey.
Swainson's Hawk <i>Buteo swainsoni</i>	S - State Migratory	No	None discovered during survey. Potential summer migrant.
Pinyon Jay <i>Cymnorhinum cyanocephalus</i>	S - State	No	The project area does not support pinyon-pine habitat.

SPECIES <i>Scientific Name</i>	STATUS	SUITABLE HABITAT	RATIONAL
Loggerhead Shrike <i>Lanius ludovicianus</i>	S - State	No	Prefers lower elevation deserts, grasslands, orchards, and grassy woodlands. None discovered during site survey.
Black Rosy-Finch <i>Leucosticte atrata</i>	S - State Migratory	No	Prefers alpine meadows and lowland grasslands. No nesting habitat on the project area. None discovered during survey.
Northern Goshawk <i>Accipiter gentilis</i>	S - State	Potential foraging	Prefers high altitude mixed conifer forests for breeding. No nests or individuals discovered within ½- mile of project site.
Lewis's woodpecker <i>Melanerpes lewis</i>	S - State Migratory	No	Prefers pine-oak or pine-cottonwood forests for breeding habitat. Potential migrant.
Brewer's Sparrow <i>Spizella breweri</i>	S - State Migratory	Potential nesting habitat south of town.	None recorded during survey. Project areas are disturbed.
Sage Thrasher <i>Oreoscoptes montanus</i> LeConte's Thrasher <i>Toxostoma lecontei</i> Bendire's Thrasher <i>Toxostoma bendirei</i>	S - State Migratory	Potential nesting habitat south of town.	Prefers dry sagebrush plains and arid areas such as the floors of rocky canyons. None recorded during survey. Project areas are disturbed. Sage thrasher is a summer migrant. LeConte's and Bendire's thrashers are not typically known to occur in this area.
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	S - State Migratory	No	Prefers flat sandy beaches, salt flats and sandy areas.
Mammals			
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>) Spotted Bat (<i>Euderma maculatum</i>) Big brown bat (<i>Eptesicus fuscus</i>) Western pipistrelle (<i>Pipistrellus hesperus</i>) Greater western mastiff bat (<i>Eumops perotis californicus</i>) Silver-haired bat (<i>Lasionycteris noctivagans</i>), Western red bat (<i>Lasiurus blossevillii</i>), Hoary bat (<i>Lasiurus cinereus</i>), Brazilian free-tailed bat (<i>Tadarida brasiliensis</i>), Pallid bat (<i>Antrozous pallidus</i>)	S - State	Potential foraging habitat.	No suitable roosting or nesting habitat. These bats tend to prefer mines, caves, and rock crevices. No suitable watering sites.

SPECIES <i>Scientific Name</i>	STATUS	SUITABLE HABITAT	RATIONAL
California myotis (<i>Myotis californicus</i>) Western small-footed myotis (<i>Myotis ciliolabrum</i>) Long-eared myotis (<i>Myotis volans</i>) Little brown myotis (<i>Myotis lucifugus</i>) Fringed myotis (<i>Myotis thysanodes</i>) Long-legged myotis (<i>Myotis volans</i>) Yuma myotis (<i>Myotis yumanensis</i>)	S - State	Potential foraging habitat.	No suitable roosting or nesting habitat. These myotis prefer mines, caves, and rock crevices. No suitable watering sites.
Desert Bighorn Sheep <i>Ovis Canadensis nelson</i>	S - State	No	Prefers rocky habitat with steep slopes typically over 30%.
Pygmy Rabbit <i>Brachylagus idahoensis</i>	S - State	Potential in Newman Canyon Wash.	Suitable sagebrush habitat below 8,500 feet msl is available in the lands surrounding Caliente. No burrows were discovered in Newman Canyon Wash adjacent to the sediment disposal area. All areas included in the project foot print are previously disturbed and not suitable for burrowing.
American Pika <i>Ochotona princeps</i>	S - State	No	Project area contains little understory. Pikas are rare below 8,200 feet mean sea level (msl) (Wikipedia 2012).
Dark kangaroo mouse <i>Microdipodops megacephalus</i> Pale kangaroo mouse <i>Microdipolops pallidus</i> Pahrnagat Valley montane vole <i>Microtus montanus focosus</i>	S - State	No	Prefers sandy deserts, typically below 5,200 feet msl (O'Farrell and Blaustein 1974).
Fish			
Big Spring spinedace <i>Lepidomeda mollispinis pratensis</i>	T – Federal	No	Cool-water fish that spawns in spring and early summer. Occurs in high velocity waters. Occurs in Meadow Valley Wash within Cordon Canyon, near Panaca upstream of the project area.
Hiko White River springfish <i>Crenichthys baileyi grandis</i>	E – Federal	No	Extirpated from Hiko Spring. Currently occurs in Crystal Spring. Refugia population established at Blue Link Spring. Not known to occur in Meadow Valley Wash.
Pahrnagat roundtail chub <i>Gila robusta jordani</i>	E – Federal	No	Found in larger tributaries of the Colorado River occupying the deepest pools and eddies. Not know to occur in this section of Meadow Valley Wash.

SPECIES <i>Scientific Name</i>	STATUS	SUITABLE HABITAT	RATIONAL
White River springfish <i>Crenichthys baileyi baileyi</i>	E - Federal	No	Only known to occur in Ash Springs, located north of Alamo. Prefer calm, deep pools, 1.3 to 5.6 feet. Not know to occur in this section of Meadow Valley Wash.
Plants			
Las Vegas Buckwheat <i>Eriogonum corymbosum</i> var . <i>nilesil</i>	C - Federal	No	Found on and near gypsum soils, often forming low mounds or outcrops in washes and drainages, or in areas of generally low relief, often with <i>Arctomecon californica</i> and other gypsum-tolerant species. 1,900 – 3,839 feet msl.*
Ute lady’s tresses <i>Spiranthes diluvialis</i>	T - Federal	No	Found in wet meadows, streambanks and abandoned oxbow meanders, marshes. Typically flowers during summer; June – August.

E = Federal Endangered
T = Federal Threatened
C = Federal Candidate
S = State Sensitive

The project area does not support suitable habitat for any Federally-listed threatened or endangered species or state sensitive plant or animal species. No state sensitive terrestrial wildlife species were discovered during site review.

4.7.2 Alternative 1 - No Action

There would not be any effects to Federally-listed endangered or threatened species, or state sensitive plant or animal species under Alternative 1.

4.7.3 Alternative 2 - Spring Heights Flood Control Proposed Project

Because the project area lacks suitable habitat for any Federally-protected species, Alternative 2 would not affect any threatened or endangered species. Therefore, Alternative 2 complies with Section 7 of the ESA.

4.7.4 Mitigation

There is no mitigation related to threatened or endangered species proposed.

4.8 EO 13112 - Invasive Species

4.8.1 Affected Environment

EO 13112 requires Federal agencies to prevent the introduction of invasive species and to provide for their control and minimize the economic, ecological, and human health impacts that invasive species cause. One non-native species was identified within the project area; however, it would not meet the definition of "invasive" as provided under EO 13112. Russian thistle, a type of tumbleweed, is common at the sediment disposal site, and in the greater area around Caliente.

4.8.2 Alternative 1 - No Action

Alternative 1 would not result in the introduction or control of invasive species.

4.8.3 Alternative 2 - Spring Heights Flood Control Proposed Project

Alternative 2 would not result in the introduction or control of invasive species. There are no invasive species associated with the project area. The City of Caliente would ensure that any imported fill or other construction materials would be certified as being free from containing invasive species. Therefore, Alternative 2 would comply with EO 13112.

4.8.4 Mitigation

There is no mitigation related to invasive species proposed.

4.9 Historic Properties and Cultural Resources

4.9.1 Affected Environment

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

Thirty-three cultural resource inventories, 10 cultural sites, and 12 historic structures were previously recorded within one mile of the project area (Bighorn 2013). Only one cultural site - a historic trash scatter (Site 26LN4000) is within the project disturbance boundaries. This site was determined not eligible for listing to the National Register of Historic Places (NRHP). Eight in-period historic structures and features are also located adjacent to the proposed project construction corridor along Clover Street and Spring Heights Drive. These include The Caliente Railroad Depot (26LN1508), the Culverwell Railroad Store, the Culverwell Ranch, the Miller Building, the Culverwell Store and Hotel, a residence, and a stone foundation and walls. Of these structures, the Caliente Railroad Depot was listed on the NRHP on 5 March 1974 under criteria (a) and (c) as it is associated with significant events in the history of the area and it embodies distinctive characteristics of a type, period and method of construction. And, the Culverwell Railroad Store is potentially eligible for the NRHP under criterion (a), (b), and (c) for its association with significant events and individuals in history, its unique characteristics, and it maintains integrity. Neither of these structures lies within the Area of Potential Effect (APE).

The remaining structures have either been determined not eligible or are recommended as not eligible for the NRPH, and all lie beyond the area of direct effects. (Bighorn 2013).

4.9.2 Alternative 1 - No Action

There would not be any impacts to eligible historic properties or cultural resources under Alternative 1.

4.9.3 Alternative 2 - Spring Heights Flood Control Proposed Project

There would not be any impacts to eligible historic properties or cultural resources under Alternative 2. There are no eligible historic properties or cultural resources within the proposed disturbance areas. The only NRHP listed or NHPA significant resources adjacent to the proposed disturbance areas are the Union Pacific Railroad Caliente Station and the Culverwell Railroad Store. These structures are beyond the APE footprint of the construction on Clover Street and would not be affected.

4.9.4 Mitigation

There is no mitigation related to historic properties or cultural resources proposed.

4.10 Air Quality

4.10.1 Affected Environment

The Clean Air Act is a comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. It authorized the US Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQSs) to protect public health and the environment. The NAAQSs include standards for the following five criteria pollutants: nitrogen dioxide (NO₂), ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter less than 10 micrometers in diameter (PM₁₀). In addition, new NAAQSs for ozone and particulate matter less than 2.5 micrometers in diameter (PM_{2.5}) have been implemented. Areas where the monitored concentration of a pollutant exceeds the NAAQS are classified as being in nonattainment for that pollutant. If the monitored concentration is below the standard, the area is classified as in attainment. The project area is within an attainment area for all criteria pollutants.

4.10.2 Alternative 1 - No Action

Under Alternative 1, there would be no effects to air quality, as no construction or other activities resulting in air emissions would occur.

4.10.3 Alternative 2 - Spring Heights Flood Control Proposed Project

The proposed project would result in negligible impacts to air quality that would be temporary (during construction) and long term (during cleaning out of the settling basin and subsequent deposition in the sediment disposal site [negligible]; and as a result of the sediment storage [moderate]). Combustion engines associated with construction equipment and vehicles would emit CO, NO₂, SO₂, and O₃ precursors. Ground disturbance would result in emissions of PM₁₀ and PM_{2.5}. To minimize the effects to air quality during construction, the City of Caliente would

ensure use of well-maintained and properly tuned construction equipment and vehicles, minimize idling time of construction vehicles, and employ dust control measures, such as watering disturbed areas and covering spoil piles, as necessary.

Emissions of PM₁₀ and PM_{2.5} would occur when the settling basin was cleaned out and the sediment subsequently unloaded onto the disposal site. These events would have a very short duration of impact to air quality. However, the unconsolidated sediments stored on the disposal site may become a long term source of airborne particulates during dry, windy conditions. This would be a moderate adverse impact to air quality in the vicinity of the sediment disposal area.

4.10.4 Mitigation

To mitigate the impacts of air quality impacts due to the sediment storage at the disposal site, dust abatement in the form of a surface applied palliative (e.g., magnesium chloride) will be applied on the disposal site by the City of Caliente at the beginning of each dry season or after each instance of sediment disposal at the site. This would mitigate the effects to a negligible magnitude.

4.11 Noise

4.11.1 Affected Environment

The Noise Control Act tasks the USEPA to prepare guidelines for acceptable ambient noise levels and it only charges those Federal agencies that operate noise-producing facilities or equipment with implementing noise standards. By nature of its mission, FEMA does not have statutes defining noise.

Certain land uses are sensitive to noise. Noise-sensitive receptors are located at land uses associated with indoor and/or outdoor activities that may be subject to stress or significant interference from noise. They often include residential dwellings, hotels, hospitals, nursing homes, educational facilities, libraries, and offices. Noise-sensitive receptors in the vicinity of the project area include residences on Spring Heights Road and City Hall. The public library and city offices are located within City Hall. The BLM Caliente District office is located approximately 340 feet east of the proposed sediment disposal site, however, it is separated from the site by SR 93. Noise sources in the project area include train use of the Union Pacific Railroad, highway traffic along SR 93, and vehicle traffic along Spring Heights Drive and Clover Street.

4.11.2 Alternative 1 - No Action

Under Alternative 1, there would not be any changes to the current level of noise in the project area.

4.11.3 Alternative 2 - Spring Heights Flood Control Proposed Project

There would be temporary (during construction) increases in construction-related noise during the road improvements, storm drain system upgrades, and settling basin construction under Alternative 2.

Noise levels resulting from construction would comply with local noise ordinances. In the long term, increases in machinery noise would occur when the settling basin was cleaned out. These noise impacts would be minor and brief but would occur each time the settling basin required cleaning.

4.11.4 Mitigation

The City of Caliente would be responsible for implementing the following measures to reduce noise levels and their effects to the extent practicable:

- All mobile or fixed noise-producing construction equipment that is regulated for noise output by a local, state, or Federal agency would comply with such regulation.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, would be for safety warning purposes only.
- Construction would be limited to weekdays between 7 a.m. and 7 p.m. and between 10 a.m. and 5 p.m. on weekends.

4.12 Traffic

SR 93 is an arterial road through the City of Caliente and the primary access to Las Vegas to the south and Ely to the north. Clover Street is connected to SR 93 by Spring Street, which is one of two Union Pacific Railroad crossings in the City of Caliente. Clover Street hosts one of the City of Caliente's commercial districts. Spring Heights Drive is paved from the intersection with Clover Street south approximately 1,250 linear feet; the pavement ends and the road becomes a graded gravel road called Tower Road. Tower Road is located in the bottom of the ravine for most of its length to Ella Mountain. Vehicle passage on Spring Heights Drive and at the intersection with Clover Street becomes difficult or impossible during flooding events when storm water inundates the roadway. After flooding subsides, the sediment and debris left behind also inhibit vehicle passage until the roadway is cleared.

4.12.1 Alternative 1 - No Action

Under Alternative 1, impacts to traffic on Spring Heights Drive and the Clover Street intersection caused by flooding of the roadway and the subsequent damage and clean up would continue to occur.

4.12.2 Alternative 2 - Spring Heights Flood Control Proposed Project

Alternative 2 would temporarily impact traffic during construction of the settling basin and the improvements to the roadway and storm drain system. Because SR 93 is a major highway that becomes an arterial route through the City of Caliente, the small addition of any construction vehicle traffic associated with Alternative 2 would be negligible. The City of Caliente may need to detour traffic at the intersection of Spring Heights Drive and Clover Street during improvements to the roadway and storm drain system, which would cause increased traffic on the alternate route. In the long-term, vehicle passage would be renewed more quickly after storm events, because less sediment and other material would be deposited on the roadways, requiring a shorter clean up time. This would be a minor beneficial impact on traffic.

4.12.3 Mitigation

The City of Caliente will provide notification, signage, flag persons, and other measures to minimize disruption to residents and businesses on Spring Heights Drive, Clover Street, and any detour routes.

Access to all businesses and residents will be provided during construction to the extent possible while ensuring public safety. If an access requires a temporary closure during construction the contractor would notify the owner or tenant 48 hours in advance of temporary access closure. Any access closure will be minimized in duration to the extent possible.

4.13 Socioeconomics

4.13.1 Affected Environment

Both the City of Caliente and private residents and business owners on Spring Heights Drive bear the economic cost of flood damage and clean up. There are many residences and businesses on Spring Heights Drive that incur costs and time spent removing sediment and other flood debris from their property. As an example, the damage and clean up costs related to a 1996 flood from Spring Heights were approximately \$150,000 (in today's dollars) .

4.13.2 Alternative 1 - No Action

The City of Caliente and local residents and businesses would continue to incur costs to repair damage and clean up from flooding down Spring Heights Drive.

4.13.3 Alternative 2 - Spring Heights Flood Control Proposed Project

Under Alternative 2, erosion from the mountains would still occur during storm events but much of the material would be captured in the settling basin at the head of Spring Heights Drive. The settling basin would not eliminate all sediment and debris from being deposited downstream, especially during storm events of a longer duration. The longer the duration of a flood event, the more likely the settling basin would exceed its capacity. However, private property would experience less damage and the clean up after flood events would be reduced. This would result in fewer costs incurred by private residents, business owners, and the City of Caliente to address sediment deposition and other damage caused by flooding. This would be a moderate to major beneficial impact to economics depending on the scale of each flood event.

4.13.4 Mitigation

There is no mitigation related to socioeconomics proposed.

4.14 EO 12898 - Environmental Justice

4.14.1 Affected Environment

EO 12898 requires Federal agencies to make achieving environmental justice part of their missions by identifying and addressing disproportionately high and adverse human health or environmental effects by its programs, policies, and activities on minority and low-income populations. EO 12898 also tasks Federal agencies with ensuring that public notifications regarding environmental issues are concise, understandable, and readily accessible.

Population and income data specific to the City of Caliente was not available from the US Census Bureau. However, in Lincoln County 10.4 percent of families in 2012 lived below the poverty level, compared to 9.5 percent overall in Nevada and 16 percent in the US overall (USCB 2007-2011). Approximately 9 percent of the population in Lincoln County is classified as minority (non-white) (USCB 2010).

4.14.2 Alternative 1 - No Action

There would not be any effect on low-income or minority populations under Alternative 1. Impacts from flood damage would continue to affect those private properties located along Spring Heights Drive and Clover Street. The owners or tenants of the affected properties are not disproportionately low income or minority persons when compared to the neighboring residents of Caliente.

4.14.3 Alternative 2 - Spring Heights Flood Control Proposed Project

As described in preceding sections, no substantial, unmitigated, adverse impacts are expected to occur as a result of Alternative 2. Therefore, Alternative 2 would not result in disproportionately high or adverse effects on minority or low-income populations and would comply with EO 12898.

4.14.4 Mitigation

There is no mitigation related to environmental justice proposed.

5.0 CUMULATIVE IMPACTS

CEQ defines a cumulative impact as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions...” (40 CFR Part 1508.7). The only resources that could have measurable adverse impacts under Alternative 2 - the proposed project - would be air quality and traffic movement. However, after mitigation is applied these impacts are considered short-term, negligible in magnitude and duration.

Two additional construction projects are in the preliminary design and environmental analysis phase; replacement of the bridge across Clover Creek at the Youth Center and improvements to Clark Street. If construction of all 3 projects occurred concurrently, the impact on local traffic movement and air quality could be elevated from short-term, negligible to short-term, minor impacts in magnitude. However, concurrent construction is not anticipated at this time. No long-term cumulative adverse impact on traffic or air quality would be experienced post construction.

The proposed action when added to the previous flood control projects undertaken by the City of Caliente - such as the bank protection project on Meadow Valley Wash - cumulatively act to decrease financial losses to the City related to flooding. The cumulative impact of these flood control projects is a positive socioeconomic impact. There are no other past, present, or reasonably foreseeable flood control or stabilization projects known at this time. Therefore, no cumulative adverse impacts would be expected.

6.0 SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

There would not be any trade off between short-term uses of resources and the long-term productivity of those resources as a result of the proposed project.

7.0 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed settling basin would be constructed of concrete slab and walls. This would be a permanent structure and the land would be dedicated for that purpose. The energy expended to clean out the sediment deposited in the settling basin would be an ongoing process with no anticipated termination in the foreseeable future. The sediment cleaned from the settling basin would be used as fill material on the city industrial park. It is anticipated that the industrial park will eventually be developed.

8.0 PUBLIC PARTICIPATION AND AGENCY COORDINATION

An Initial Public Notice for the proposed project was published in the *Lincoln County Record* on June 28, 2013. A scoping letter was mailed to 29 interested parties on July 22, 2013. Two comments were received during the comment period. These comments are provided below in **Table 8.0**.

Table 8.0 Public Comment Matrix.

COMMENTS	DATE	ISSUE	RESPONSE
Rebecca Lynn Palmer, State Historic Preservation Officer, State Historic Preservation Office	August 21, 2013	What effect will this project have on the Caliente Railroad Depot?	The proposed project will have no direct or indirect adverse effect on the Caliente Railroad Depot, Section 4.9 (Bighorn 2013).
D. Bradford Hardenbrook, Supervisory Habitat Biologist, Nevada Department of Wildlife – Southern Division	August 19, 2013	Proposal supported as written.	No response necessary based on comment content.

FEMA posted the Draft EA on the FEMA library website for a 15-day public comment period on December 16, 2013. The City of Caliente posted a Notice of Availability in the local newspaper and maintained a hard copy available for public review in the city office. During the public comment period, FEMA did not receive any written comments on the Draft EA addressed to Donna M. Meyer, DREO, 1111 Broadway, Suite 1200, Oakland, California 94607; or fema-rix-ehp-documents@dhs.gov.

At the end of the 15-day comment period, FEMA drafted this Final EA and a Finding of No Significant Impact (FONSI) and posted both documents on the FEMA library website for a final 15-day public comment period. The City of Caliente posted a Notice of Availability in the local newspaper and maintained a hard copy of both documents for public review in the city office.

9.0 REFERENCES

- Bighorn Archaeological Consultants, LLC (Bighorn). 2013v3. A cultural resource inventory of the Caliente Spring Heights Flood Control Project, Lincoln County, Nevada. Report Number 13-19. Prepared for FEMA Region IX, the City of Caliente, and Sunrise Engineering. April 2013.
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US Geological Society (USGS). 2009b. Model-generated probability of earthquake with M>6.0 within 20 years and 50 km (2009 PSHA Model) for zip code 89008. Query run July 10, 2013 at 2009 Earthquake Probability Mapping website <https://geohazards.usgs.gov/eqprob/2009/>.

10.0 LIST OF PREPARERS

The following individuals assisted in the preparation of this EA:

Table 10.0 List of Preparers.

NAME	AFFILIATION	ROLE
Donna M. Meyer	Deputy Regional Environmental Officer, FEMA	Project Lead
Jill Hankins	JBR Environmental Consultants, Inc.	Project Manager Biological Resources
Stephanie Lauer	JBR Environmental Consultants, Inc.	Lead Writer/Editor
Dale Gourley	Bighorn Archaeological Consultants	Historic and Cultural Resources

Appendices

Appendix A - Public Notice Documents

Appendix B - Tribal Consultation Documents

Appendix C - SHPO Consultation Documents

Appendix D – Historic Properties and Cultural Resource Survey

Appendix E - Biological Survey

**Appendix F - EO-11988 Eight-Step Decision Making Process
Summary**