MARCH 2018

SKULL VALLEY BAND OF GOSHUTE

FLOODPLAIN MANAGEMENT PLAN

Shambip Conservation District

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INTRODUCTION

The Skull Valley Band of Goshute (also referred to hereafter as "the Tribe") developed this Floodplain Management Plan (FMP) to further its efforts to respond to and recover from flood and other disasters, and to articulate the strategies for mitigation and prevention of damages from future disasters, should they occur. This is a living document, and the Tribe may amend this document as information becomes available and decisions are made to implement any of the strategies or recommended actions in this plan.

PURPOSE OF THE FLOODPLAIN MANAGEMENT PLAN

The purpose of this FMP is to determine actions that, if implemented, would reduce flood risk, maintain and enhance the floodplain, and make effective use of water and related land resources within the floodplain. The actions proposed have the potential to increase the Tribe's resiliency to the natural occurrence of floods. An effective FMP offers options to lessen the impacts of flooding to the Tribe's economy and the lives of those living on the Reservation. Once adopted, the FMP should be maintained as a living document that is continually updated as new information arises, or as additional goals and strategies are developed.

FMPs are a shared planning methodology that document a community's approach to drive down flood risks. Governments, agencies, and the Tribal community work together to achieve common goals. Effective teamwork and management of both floodplains and floodwaters can break the cycle of damage and rebuild, resulting in reduced damages and better preparedness for future events.

Floodplain Management Goals

Improve Emergency Response Capability

This FMP aims to provide as much information to the Tribe as possible to facilitate emergency response needs. The Tribe is gathering information about the floodplain and the resources in the area prone to flooding. This FMP aims to provide recommended actions and resources available to the Tribe in case of flood and other emergencies. Quick response to a disaster, such as a flash flood, is a critical component of ensuring the safety of the residents.

Develop Preventive Measures to Reduce Flood Damages

This FMP aims to provide information to the Tribe so that Tribal members can discuss investment and implementation strategies for potential measures. Investing in measures to manage flood risk could save the Tribe both time and resources. Studies show that every $1 spent on mitigation saves society an average of $4 (Multihazard Mitigation Council, 2005). The Tribe can use this FMP to begin the discussion on deciding which strategies to implement to manage flood risk. Then, once a decision is made to invest in a measure or an action, the Tribe can update this FMP to memorialize decisions.

Document the Flood History of Skull Valley

Documenting the flood history of the Skull Valley Band of Goshute Reservation is challenging due to a lack of written records and existing technology for data-collection. One goal of this FMP is to serve as a central location for flood records, including oral history and photographic evidence, after-action reports or flood assessments, and any instrumentation data available that tell the story of flooding. The Skull Valley Band of Goshute would hold and track these documents and records, some of which are included in Appendix F. The FMP can serve as a summary of public records for use by local, State, and Federal agencies.

Development of the Floodplain Management Plan

Plan Participation

This FMP was collaboratively developed using Tribal, local, State, and Federal resources. The Technical Advisory Group (TAG), established after the initial kickoff meeting, guided the

development of the FMP and was responsible for the completion of the FMP. The TAG was made up of partner agencies and the Skull Valley Band of Goshute Tribal Council, as detailed in the table below. Following the kickoff meeting, the TAG held biweekly calls throughout the development of the FMP. The TAG also participated in two in-person meetings in Salt Lake City, Utah as well as two meetings and one outreach event at the Skull Valley Band of Goshute Reservation.

The Skull Valley Band of Goshute is the ultimate owner of the FMP, a living document. This draft was developed with initial support from the agencies listed in Table 1. The plan formulation that led to recommended actions in this FMP is described in the Action Plan.

Table 1: List of participating entities and agencies

Local	State	Federal
Skull Valley Band of Goshute Tribal Council	Utah Division of Emergency Management	U.S. Army Corps of Engineers
Shambip Conservation District		Natural Resources Conservation Service
Tooele County		Federal Emergency Management Agency
		Bureau of Indian Affairs
		National Oceanic and Atmospheric Administration
		Bureau of Land Management
		U.S. Forest Service

Development Timeline

The development of the FMP began in the fall of 2016. The initial draft was expected to be delivered to the Skull Valley Band of Goshute in October 2017 for consideration of adoption as a tool for meeting the Tribe's stated goals. A revised timeline was established in late fiscal year 2017, to extend the delivery date to January/February 2018, with closeout of the project and final

report submittal expected in March 2018. See Table 2 for a detailed timeline of milestones and deliverables.

Table 2: FMP timeline

	Fiscal Year 2017										Fiscal Year 2018					
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Initial Kickoff Meetings	X															
Data Gathering		X	X	X												
Half of First Draft Submitted (Background and Description)					X											
Outreach/Site Visit					X											
Tribal Review, Development of Action Plan						X	X									
Second Draft Submitted								X								
Tribal and Agency Review									X	X	X	X	X			
Final Draft Submitted														X		
Final Report & Closeout Documentation															X	X

DESCRIPTION OF THE AREA

The Skull Valley Band of Goshute Reservation is approximately 50 miles southwest of Salt Lake City, Utah. The Reservation encompasses 30 square miles, 12 miles north of Dugway Proving Grounds and 24 miles south of the intersection of Interstate 80 and State Highway 196. The Reservation is currently home to 16 members of the Skull Valley Band of Goshute. It is located in Tooele County at the base and on the west side of the Stansbury Mountain Range, and is positioned inside four different Hydrologic Unit Code (HUC)-12 watersheds: Indian Hickman Canyon, Spring Creek, Wide Hollow, and Antelope Canyon. A map of the area relative to Salt Lake City is provided in Figure 1. An oblique angle image of the reservation and the Stansbury Mountain Range is provided in Figure 2.

According to the National Oceanic and Atmospheric Administration (NOAA), Skull Valley experiences a dry climate with no perennial streams, meaning there are no continuously running streams on the Reservation. Residents currently rely on well water from a single well for daily use. The Reservation is located within the Shadescale-Dominated Saline Basin's ecoregion, which the Environmental Protection Agency (EPA) defines as "arid, internally drained, and gently sloping to nearly flat. Light-colored soils with high salt and alkali content occur and are dry for extended periods. Vegetation is salt and drought tolerant. It is dominated by shadscale, winterfat, and greasewood" (EPA, factsheet).

Figure 1: Map of the Skull Valley Reservation relative to Salt Lake City, Utah

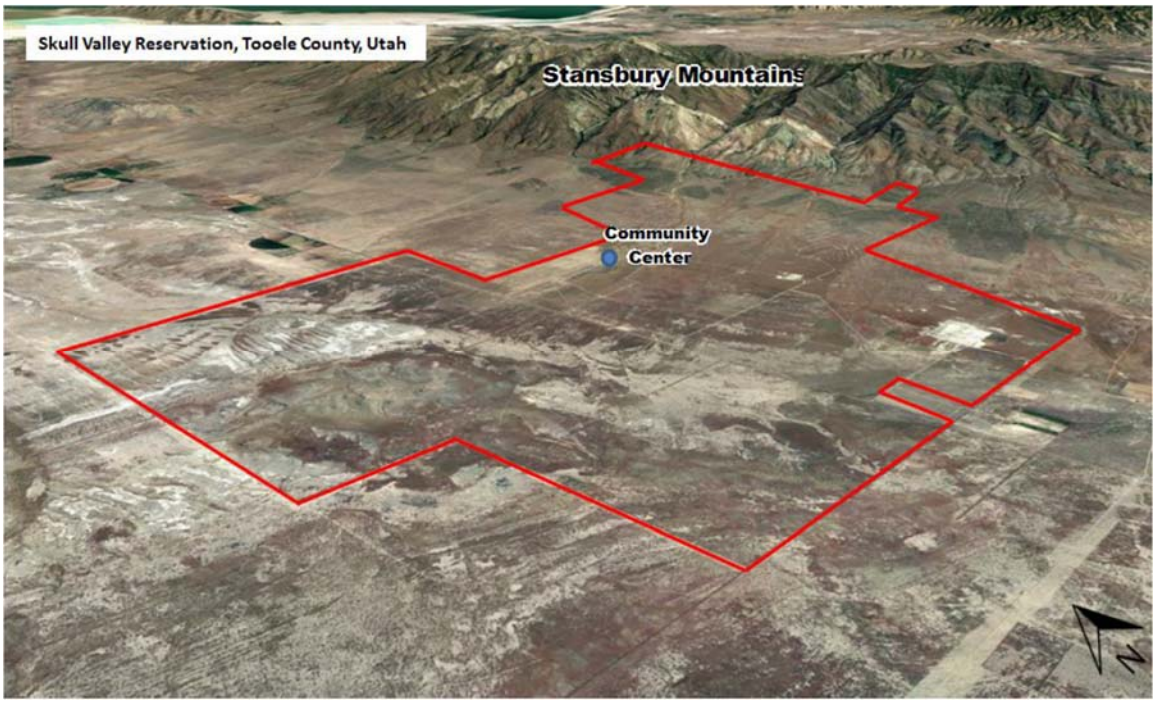

Figure 2: Map of Skull Valley Reservation and the Tribe's Community Center

Cultural Resources

According to the Bureau of Land Management (BLM) and the Tribe, the majority of cultural resources in Skull Valley consist of prehistoric sites comprised of lithics, bone, and to a lesser extent ceramics, as well as historic sites comprised of metal, glass, and ceramics. Within the Reservation, there are two culturally significant cemeteries. The oldest cemetery dates back to the late 1800's.

Critical Structures

For purposes of this FMP, critical structures are defined as structures of economic, cultural, or resource value to the Skull Valley Band Goshute located on the Reservation. If a critical structure were to be damaged or destroyed, the Tribe would face significant impacts. Figure 3 shows the general area for the identified critical structures on the Reservation. The area includes:

- East well house
- Community center
- Cemeteries
- Bison field

Due to their proximity to Indian Hickman canyon, a source of flooding for the Reservation according to the Bureau of Indian Affairs (BIA), these structures may be in danger of flooding. Skull Valley does not currently have floodplain maps, which means this FMP cannot determine if the structures are located in the floodplain. Based on documentation and accounts of past floods, only one of the cemeteries was impacted by past flooding. However, these structures are located within the alluvial fan and may be in danger of flooding in the future. Flood flows have crossed in proximity to all critical structures. As this FMP progresses, and as the Tribe increases development, more critical structures may be added to this list.

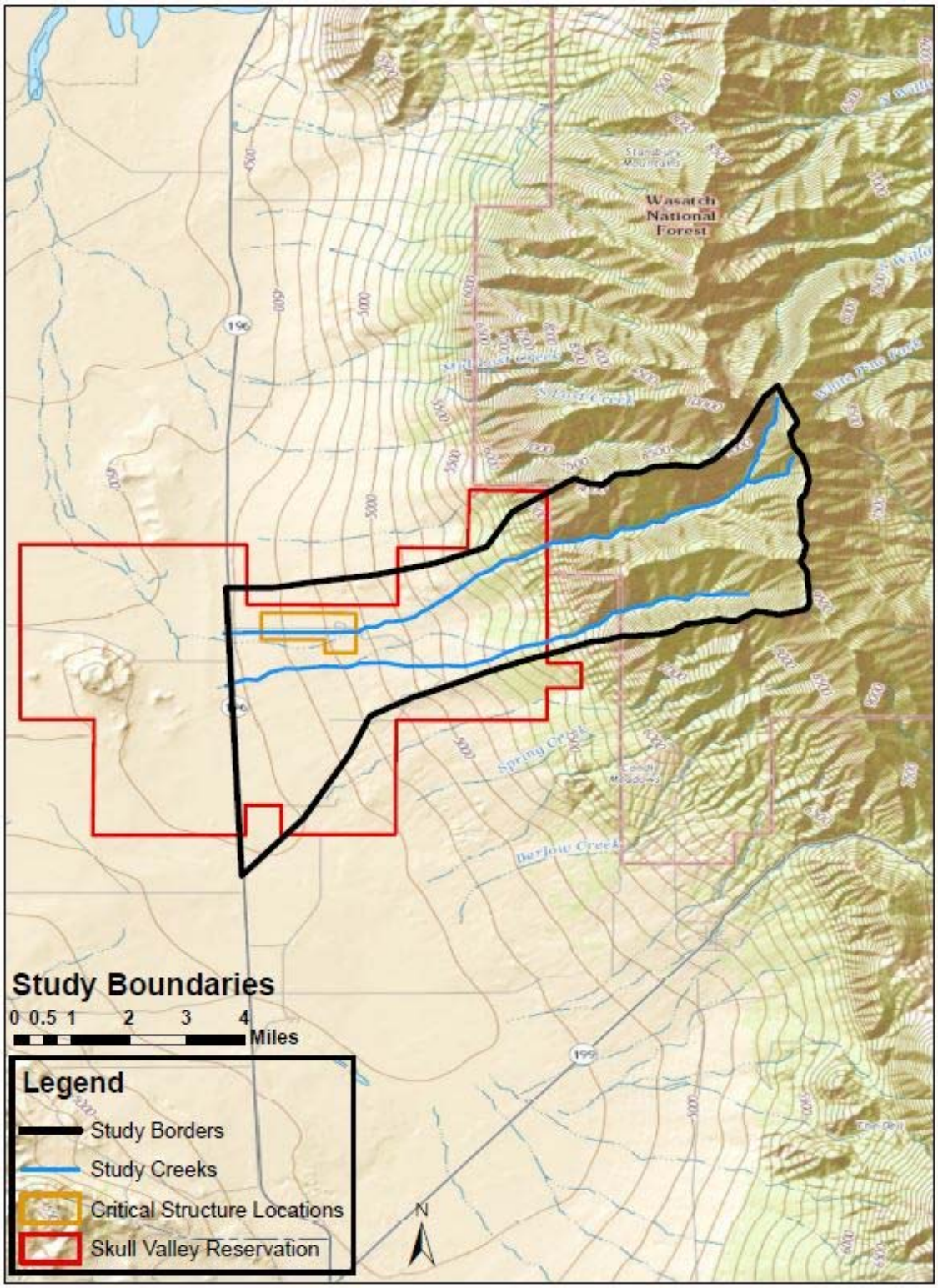

Figure 3: Map of critical structures, study borders, and creeks on the Skull Valley Reservation

FLOODPLAIN HAZARD ASSESSMENT

According to the Utah Division of Emergency Management (DEM), the main type of flooding in the Skull Valley Reservation is alluvial fan flooding. Alluvial fans develop at the base of steep mountains or hills, such as the Stansbury Mountain Range. Alluvial fans form where a stream leaves steep mountains and meets flatter ground, as shown in Figure 4. These streams carry soil and rock from the hillside or mountain to the valley floor below. Eroded material piles up and spreads out at the base of the mountain or hillside, forming what looks like a fan. There are two types of alluvial fan flooding affecting the Reservation: streamflow and debris flow.

Streamflow flooding occurs typically in arid mountainous regions that are dry most of the year. Streams only flow after brief and intense storms like thunderstorms or when the snow in the mountains melts each year. Snowmelt runoff water may only flow for a few weeks of the year. The path that water takes in a streamflow flood event changes often, and the flows can be dangerous. Heavy rain or snowmelt can cause flash floods over alluvial fans. When water is flowing on an alluvial fan, soil gets washed away by the rushing water and moved downstream, blocking the stream's path. When the stream's path gets blocked, it is forced to move in a different direction. It is challenging to know when an alluvial fan will flow, where the flow will go, and when the flow path will change (The National Academies Press, 1996).

A debris flow is a slurry of water, soil, and rock. These flows move more like wet concrete than water. Debris flows can travel fast, leave rocks, soil, and vegetation scattered, and cause a great deal of damage to anything in their path. They can cover farmland, pass through homes, and even wash away roads, damage houses, and require expensive post-flood clean up (The National Academies Press, 1996).

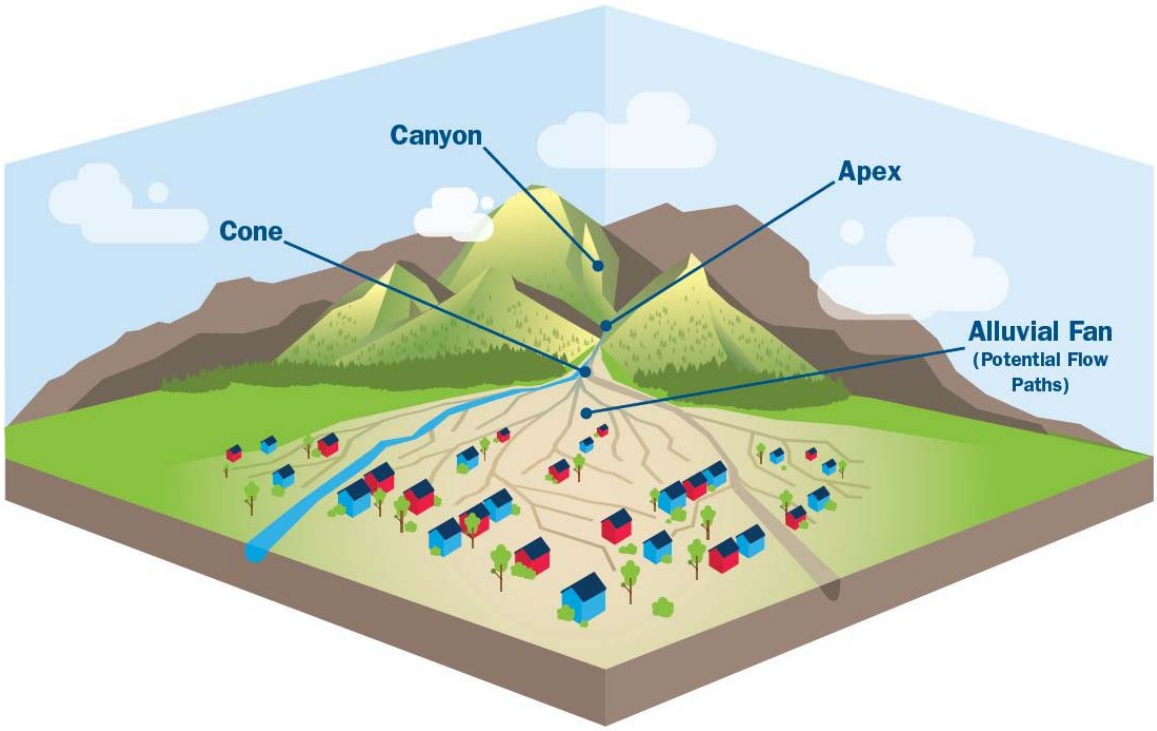

Figure 4: Graphic representation of an alluvial fan.

Based on observations by NOAA, alluvial fan flooding in Skull Valley is caused by intense rainfall exceeding the infiltration capacity of the Stansbury Mountain Range. This means that during an intense rainfall event, the soil in the Stansbury Mountains is unable to absorb rain water fast enough, resulting in runoff through the canyons. This runoff can result in powerful debris flows through the alluvial fans of Indian Hickman and Dry Canyons, two canyons facing the Reservation, as shown in Figure 5. Detailed information on historical flooding of the area is difficult to gather, given the lack of instrument (gage) data, but anecdotal evidence from oral histories and physical evidence from deposits of debris on the alluvial fans above the Reservation indicate a regular flooding history. According to the National Weather Service (NWS), the source of flooding appears to be from localized thunderstorms/rain storms, followed by flash flooding.

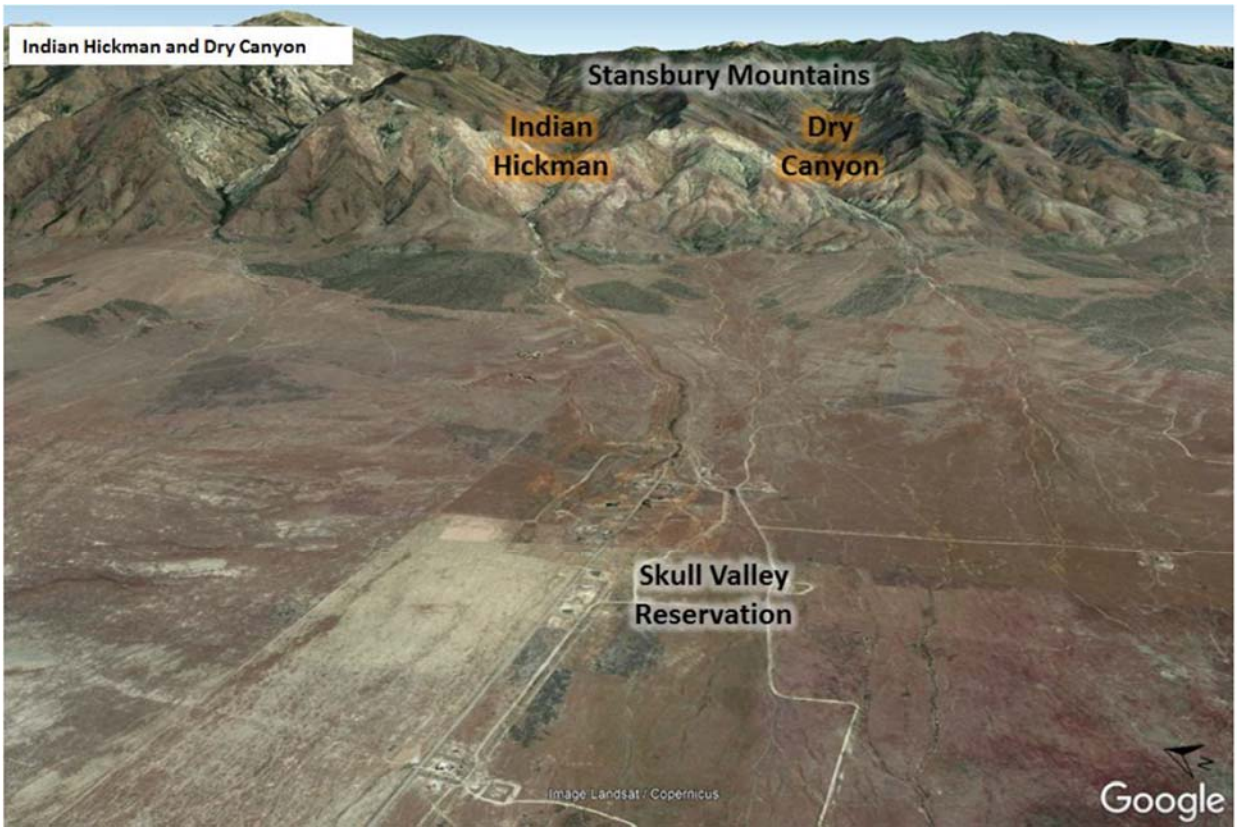

Figure 5: Map showing Indian Hickman and Dry Canyons and associated alluvial fans

Flood Event 2013

In August 2013, the Patch Springs fire burned more than 13,000 acres of public lands above the Reservation, as shown in Figure 6. The fire destroyed a water diversion structure on the eastern border of the Reservation in Indian Hickman and a gravity-fed waterline leading down to the community. The waterline supplied firefighting, irrigation, and dust suppression water.

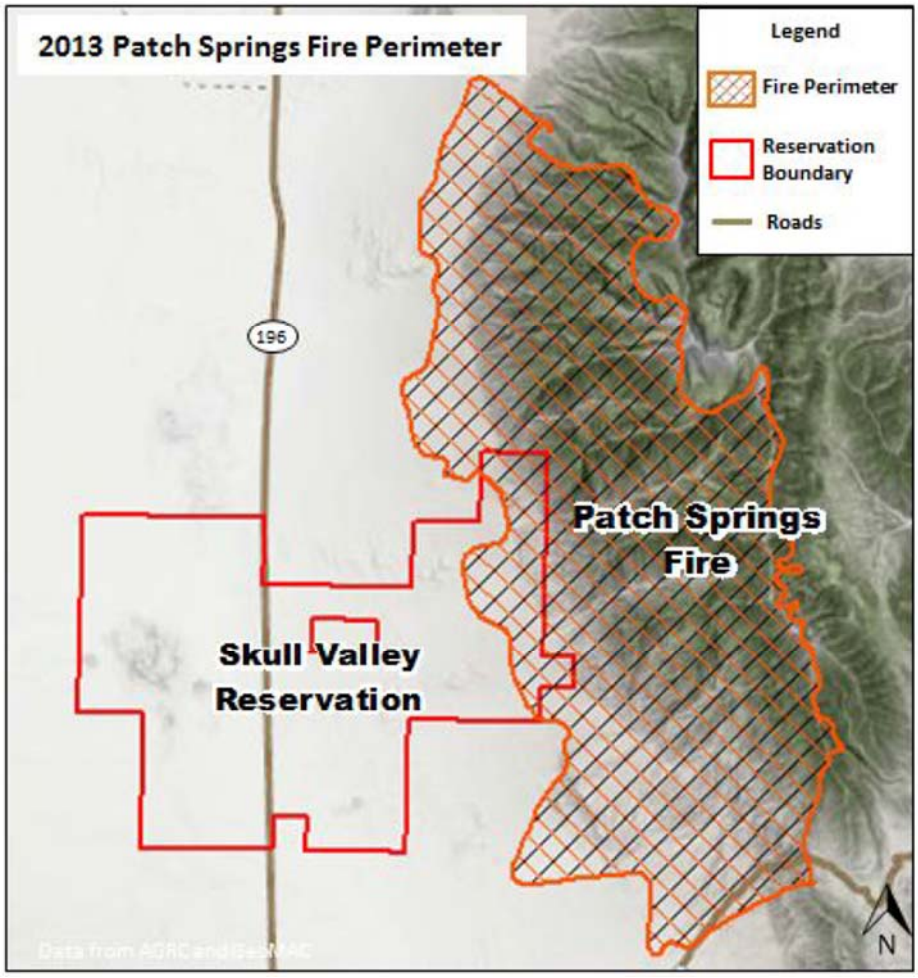

Figure 6: Map showing perimeter of the 2013 Patch Springs fire

A few weeks after the fire, on September 3-4, 2013, an intense rainstorm occurred over the Indian Hickman and Dry Canyons. NOAA records indicate that between one and two inches of rain fell in that two-day period. According to a Hydrologic Resource Assessment performed by the BIA, mud and debris flows mobilized out of Indian Hickman destroying the irrigation water intake. The mud and debris then split into numerous paths, at times following existing channels and at others, creating new ones, a mud flow path is shown in Figure 7. Mud from several flow paths made it into the community and debris was deposited on roads, in yards, in gardens, and around homes. A State Hydraulic Engineer for the Natural Resources Conservation Service (NRCS), under the U.S. Department of Agriculture, estimated the peak flow from this event at 3,000 cubic feet per second (cfs).

Figure 7: Picture of mudflow east of the Skull Valley Band of Goshute Reservation following the 2013 flood event

Two subsequent rain events caused water to flow through these new channels and into the community. The September 3-4, 2013 rain event overwhelmed the existing shallow channels and, as is expected in alluvial systems, the flow split into multiple flow paths downstream from the mouth of the canyon. The mud in this flow was of a thick consistency. One central flow path overwhelmed an existing stream channel and spilled onto the adjacent road, traveled toward the community, split again and then traveled into the community, burying a garden, depositing material into several yards and up to the base of several homes. The same flow path that buried the garden continued on, hitting a road crossing from which the material was diverted onto the ground south of the channel where it flowed toward one of the cemeteries. The material stopped about 100 feet short of the cemetery. From the two subsequent rain events, water entered the town primarily down the road and entered residents' yards and a garden (BIA, 2013).

Response Following 2013 Flood Event

In 2013, the BIA, through its Burned Area Emergency Response (BAER) plan, spent $90,000 on emergency stabilization efforts. The efforts were executed by the NRCS and involved placing

over 2,800 feet of K-rails to divert flood waters and debris flows, reinforcing the K-rails with 2,000 sandbags, constructing rolling dips and earthen berms, replacing undersized culverts, building a low water crossing, and conducting debris removal. Figure 8 shows a picture of the K-rail installation and Figure 9 shows the BAER project area.

Figure 8: Picture showing portion of the North Diversion K-Rails, placed on the Reservation as part of the BAER plan

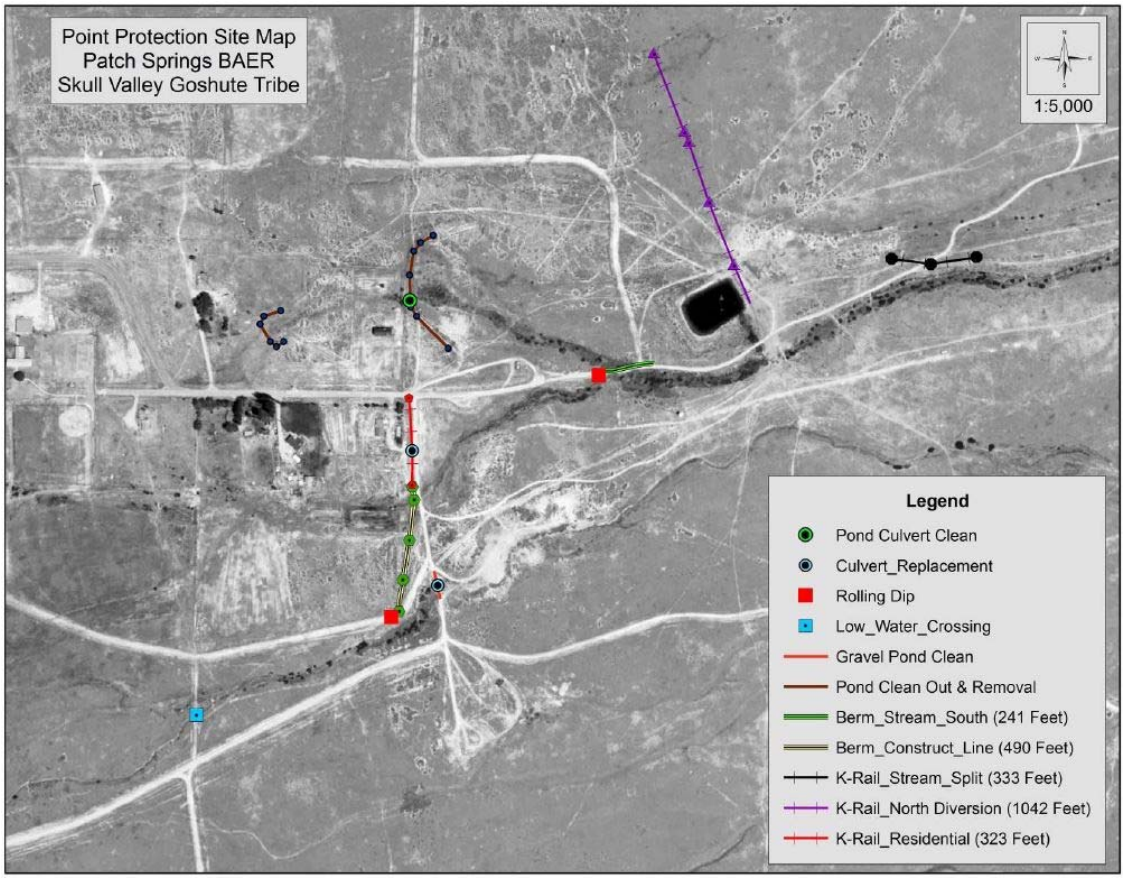

Figure 9: Map showing project area for the 2013 BAER plan

Flood Event 2014

In August 2014, Indian Hickman and Dry Canyons experienced several intense rainstorm events, leading to multiple flood events. According to the Flood Assessment Response Plan performed by the BIA, it is estimated that a maximum storm intensity of two inches per hour occurred in one event. Several hundreds of thousands of cubic yards of debris were mobilized in Indian Hickman and deposited onto the alluvial fan, which destroyed the irrigation water diversion and the culinary water delivery system to the Reservation. The treatments that were installed from the 2013 BAER plan were damaged by mud, rock, and debris. Flooding over-topped the K-rail structure east of the irrigation pond, the rolling dip near the east pump house, and the gravel pit pond embankment. After over-topping the K-rails, these flows reached residential structures and road infrastructure downstream of the treatments. The culinary water system was also washed out and a large portion of the upper road to the irrigation diversion was completely destroyed. NRCS estimated peak flow volume (including sediment and debris) near the irrigation diversion

at the mouth of Indian Hickman to be as much as 10,000 to 15,000 cfs. Water and debris covered Highway 196, four miles from the mouth of the canyon. Figure 10 shows a picture of a broken water intake distribution box and Figure 11 shows a picture of the over-topped K-rails.

Figure 10: Picture of broken water intake distribution box in Indian Hickman following the 2014 flood event

Figure 11: Picture showing K-rails after 2014 flood event

Response Following 2014 Flood Event

In response to the August 2014 flood event, the BIA created and executed a Flood Assessment Plan, including $59,000 in emergency stabilization efforts. The effort involved the construction of rolling dips and earthen berms, relocating 28 K-rails and 300 sandbags, replacing an undersized culvert, and conducting debris removal. A picture of the added K-rails is shown in Figure 12. The Utah Department of Transportation (UDOT) installed "flood area" signs along Highway 196, the main public road through the Reservation after drainage ditches along Highway 196 were filled in by debris. UDOT warned traffic of possible flooding with Variable Message Signs (VMS) along north and south bound lanes. They also spent $50,000 on debris removal.

Figure 12: Following the 2014 flood, K-rails were placed on top of the K-rails installed by the 2013 BAER plan, after those were over-topped by mudflows

The Utah DEM also provided assistance to the Skull Valley Band of Goshute after the flood event. The Tribe had an irrigation pond for fire suppression via an outlet that connected to three fire hydrants in the Reservation. Following the 2014 flood event, the outlet clogged with debris. The pond was filled to capacity and there was a concern the pond would breach, flooding nearby homes, as shown in Figure 13. The Tribe used a pump given to them by the BLM to empty the pond. The Tribe then planned on removing sediment, unclogging the outlet, and restoring the pond. As of 2018, the pond has not been restored.

Figure 13: Irrigation pond filled to capacity in the Skull Valley Reservation in 2014. The pond was emptied shortly after this picture was taken. As of 2018, the pond has not been restored.

During the fall of 2013 and winter of 2014, the BLM invested $1.5 million to implement several Emergency Stabilization and Rehabilitation (ESR) treatments on the Patch Springs fire area to stabilize soils that were exposed by the fire, reduce the threats of flash flooding, and combat cheatgrass invasion. A total of 98,200 pounds of seed was aerially seeded on 6,497 BLM acres, of which 3,888 acres were altered by chaining, a process involving two tractors pulling a chain, to plant that seed. Nearly 13 miles of fence were constructed to protect the seeding investment and allow new seedlings to establish. All BLM acres above the Skull Valley Goshute Band

Reservation lands were seeded. ESR monitoring reports have shown good establishment of several of the seeded species, which will play a significant role in increasing infiltration, reducing surface runoff, and thereby reducing the potential contribution to flash flooding events from BLM lands. BLM also constructed 214 erosion control structures, which are large earthen check dams to slow overland flow, reduce channel cutting, and catch water-borne sediments, rocks, and other debris.

In 2015, NRCS installed a 5,750-foot waterline along the south margin of the community. The line conveys water from an existing well located west of the community to an abandoned water tank located east of the community. The tank was refurbished and is currently in use for water storage for firefighting. This project enhanced water storage on the Reservation and is used for waste management.

Older Flood Events

Skull Valley residents talk about flooding on the Reservation prior to 2013, meaning that flooding was an issue on the Reservation prior to the 2013 Patch Springs fire. For future iterations of this FMP, the Tribe could research additional documentation or gather oral accounts to determine the extent of flooding in Skull Valley in the past. Elders living on the Skull Valley Band of Goshute Reservation recall floods in the 1970's, early 1950s and late 1930s, but lack of details and available documentation hinder this FMP from providing further information on these flood events. During the flood awareness workshop held at the Reservation in April 2017, two elders described the flood from the 1970s. They recalled hearing loud rumbling, which prompted Tribal members to go outside. The roaring sound was coming from Indian Hickman. They described seeing what appeared to be the earth moving toward them. They could not see water, only the large debris flow. One flow path was about five feet in height and traveled close to a house of one of the elders. Debris flows moved one of the cemeteries a few feet downward, shifting the graves at the sacred site.

A history book for the Shambip Conservation District tells the story of a Skull Valley flood taking place in 1878. Shambip, now known as the town of Rush Valley, is located on the east side of the Stansbury Mountain Range, whereas the Reservation is located on the west side. The

book recalls the flood of 1878 as a destructive flood event that started with dark and heavy clouds forming atop the Stansbury Mountains. The flood took the lives of two Tribal members and was described as the most destructive one since settlement. Although the book describes a more intense flood in Rush Valley than in Skull Valley, flood flows were still powerful enough in Skull Valley to move a heavy boulder, as described in the excerpt:

> "On the 23rd of July 1878 occurred the largest and most destructive flood since settlement was made. Clouds had been gathering each afternoon for a number of days, looking very threatening, but would finally pass off without rain. On this particular day two very dark and heavy clouds formed, one to the southwest and one to the northwest, and seemed to travel toward each other, meeting on Johnson Pass, and then began the most torrential rain ever known in this locality. The amount of water that fell seemed to be about equally divided, one half going west into Skull Valley, the other half going east into Rush Valley. The part that went west did little or no damage and improved the road on the west side of Johnson Pass very much. Since the first settlement of the place, a large boulder weighing many tons had lain in the narrows of the west side, so blocking the passage as to make it very difficult for wagons to go through it. Considerable money had at different times been spent in blasting the rock away, but it was still far from a good mountain road. The water rushed down the canyon with such force as to lift this immense stone out and carry it down the canyon several hundred yards, leaving it almost buried in gravel and leaving a fairly good mountain road all the way down the canyon."

Climate Change

As the atmosphere warms, climate models suggest Utah can expect to experience increased frequency of intense rainfall as well as a marked decrease in soil moisture during the summer (EPA, 1998). The combination of intense rainfall and decreased soil moisture can lead to more severe flooding (NOAA, factsheet). Based on observations by Utah DEM, parts of Utah are already seeing heavily localized flooding. Additionally, higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires in Utah (EPA, 2016). Skull Valley is located in an area where wildfires occur, a hazard that has already exacerbated flooding in the Reservation. Since flooding in Skull Valley is mainly caused by localized thunderstorms/rainstorms followed by flash flooding, according to NOAA, it is possible that flooding on the Reservation may become more frequent and more intense in the future.

Ongoing Projects and Development Plans

NRCS has indicated an interest in improving resource conditions on the Reservation, such as grazing management, and water supply. The Tribe uses culinary water for grazing their buffalo herd. Currently, water has to be hauled from homes to the buffalo field. To address this issue, there is a proposal to install two new wells. When this plan was written, the project was undergoing permitting. The buffalo field is currently located on the east side of Highway 196, but there are plans to move the field to the west side of Highway 196, which is believed to be a less flood-prone area.

The Skull Valley Band of Goshute's vision is to increase economic development in the Reservation in hopes of bringing more Tribal members back, and becoming self-sufficient. They are looking to build houses on the west side of the Reservation, and have already developed a plan to construct 23 miles of new roads. The Tribe would like to build a health clinic and businesses in the Reservation, where the focus could vary from entertainment to agriculture. In order for the Tribe to continue its focus on economic development, this FMP hopes to equip the Tribe with the proper preparedness tools to be used in the event of a flood, ultimately reducing costs and damages associated with flooding.

Mitigation Strategies

The TAG considered a long list of strategies and mitigation actions to recommend in this FMP. These recommendations meet the main intent of FMPs, which is to review all mitigation actions and tell why each was or was not included. This section serves to describe the reasons for inclusion or rejection of the potential mitigation actions. During a TAG meeting held in April 2017 in Salt Lake City, strategies and tools were discussed. Participating agencies, including the U.S. Army Corps of Engineers (USACE), NRCS, BIA, BLM, and DEM offered input, but ultimately representatives of the Skull Valley Band of Goshute decided which tools to recommend.

The FMP formed a list of strategies and tools with four categories. These four strategy categories, and subsequent tools, were created by the Federal Interagency Floodplain Management Task Force (FIFM-TF) during the formation of a Unified National Program for

Floodplain Management. These are the "measures" that the flood risk management professional refers to with very deliberate terminology, because these will lead to the eventual action items in the FMP. This terminology serves to clarify that the measures fall under the category of either

- an "activity" or
- a "feature"

An activity is an action done by the Tribe or partnering State and Federal agencies to better understand flood risks, reduce the risk, and manage risk in the long-term. Examples of an activity could be an informational outreach program, an updated study of a flood-prone area or an emergency action plan (EAP).

Features are actual construction projects on a property or properties that an individual can undertake, or the Tribe or partnering agencies can perform. Features can include major civil works projects such as levees, or smaller "flood risk adaptive measures," such as elevating an existing home or business. The USACE typically calls these smaller features "nonstructural measures."

Strategy: Modifying Human Susceptibility to Flood Hazards

This strategy and set of tools has to do with measures directed toward managing the floodplain. These measures include these specific activities: land use regulations, public redevelopment policies, flood warning systems, and flood emergency preparedness plans (including EAPs and flood fighting plans). These measures include the following features: flood-proofing buildings in the floodplain, berms and floodwalls for buildings, elevation of buildings, filling the basement with a main floor addition for buildings, acquisition of buildings (for demolition), and relocation of buildings. With this deliberate referencing to terminology under both activities and features, the reader will begin to see that FMPs, EAPs, and flood fighting plans are not the same.

Tool: Development of Policies and Land Use Regulations

Tool: Flood Warning Systems

Tool: Flood Emergency Preparedness Plans (or EAP)

Tool: Elevation of Buildings

Tool: Relocation of Buildings

Tool: Flood Proofing of Buildings in the Floodplain

Tool: Berms for Buildings

Tool: Fill or Conversion of a Basement with Main Floor Addition for Buildings

Tool: Acquisition of Buildings

Strategy: Modifying the Impact of Flooding

This strategy and set of tools has to do with managing the floodplain with the following specific activities: information and education, flood insurance, tax adjustments, emergency relief, and post-flood recovery processes.

Tool: Information and Education

Tool: Flood Insurance

Tool: Community Rating System

Tool: Tax Adjustments and Rebates

Tool: Emergency Relief

Tool: Post-Flood Recovery Processes

Strategy: Preserving and Restoring Floodplains' Environmental Quality

This strategy and set of tools has to do with managing the floodplain with the following specific activities and environmental features: wetlands protection and restoration, erosion and sediment control, water quality enhancement, enhancement of recreation and educational opportunities, and preservation of cultural resources.

Tool: Wetlands Protection and Restoration

Tool: Erosion and Sediment Control

Tool: Water Quality Enhancement

Tool: Enhancement of Recreation and Educational Opportunities

Tool: Preservation of Cultural Resources

STRATEGY: MODIFYING FLOODWATERS

This strategy and set of tools focuses on managing the floodwaters with the following specific features: dam, stormwater detention basins, levees and floodwalls, landforms, channel alterations, diversions, and pump stations.

Tool: Dam
Tool: Stormwater Detention and Retention Basins
Tool: Levees
Tool: Floodwalls
Tool: Landforms
Tool: Channel Alterations and Diversions
Tool: Pump Stations

The TAG will view each mitigation action differently and consensus has to be established over time. During the April 2017 TAG meeting, the Tribe and partner agencies evaluated each of the possible mitigation actions and labeled each with one of the following terms:

- **Not Recommended:** The tool was evaluated and deemed not appropriate for reasons explained.
- **Further Study Needed:** The tool is likely appropriate, but funds and additional study are needed.
- **Recommended:** The tool is recommended and deemed appropriate for implementation or future study.

These terms help stakeholders better understand the decision history for flood risk management. It is an important part of the FMP, because a Tribe's unique story is made up of a risk assessment followed by years of decisions about how to manage floodwaters and the floodplain. The specific terms also help improve public involvement. Since the public needs to be involved with defining their individual tolerable level of risk, these terms facilitate buy-in and get the Tribe focused on the actual action items identified later in this plan. These actions, if taken, would eventually lead to more effective hazard mitigation by reducing the risks from natural hazards, like flooding.

At any time, the Tribe could make revisions to the FMP and update evaluations on the mitigation actions. Over time, consensus will be established and a collaborative approach to building projects can be achieved. The story behind the evaluation of all of the measures is a decision history that can be used by the elected Tribal officials to work with the Tribal members to create a more resilient community in the future.

Strategies and Mitigation Actions Dashboard

Members of the Skull Valley Band of Goshute and partner agencies held a TAG meeting in April 2017 to review the list of potential strategies and tools described in the Mitigation Strategies section above. After evaluating each tool, the Tribe, with input from partner agencies, chose which ones it would recommend, not recommend, or study further. The following table summarizes these findings and provides quick insight on how the Tribe will seek to manage flood risk.

Table 3: List of strategies and tools with recommendations

Strategies and Tools	Determination
Strategy: Modifying Human Susceptibility to Flood Hazards	
Development of Policies and Land Use Regulations	Recommended
Flood Warning Systems	Recommended
EAP	Recommended
Elevation of Buildings	Recommended
Relocation of Buildings	Not Recommended
Flood Proofing of Buildings in the Floodplain	Recommended
Berms for Buildings	Recommended
Fill or Conversion with Main Floor Addition for Buildings	Not Recommended
Acquisition of Buildings	Not Recommended
Strategy: Modifying the Impact of Flooding	
Information and Education	Recommended

Flood Insurance	Further Study Needed
Community Rating System	Further Study Needed
Tax Adjustments and Rebates	Not Recommended
Emergency Relief	Further Study Needed
Post-Flood Recovery Processes	Recommended
Strategy: Preserving and Restoring the Floodplain's Environmental Quality	
Wetlands Protection and Restoration	Not Recommended
Erosion and Sediment Control	Recommended
Water Quality Enhancement	Recommended
Enhancement of Recreation and Educational Opportunities	Recommended
Preservation of Cultural Resources	Recommended
Strategy: Modifying Floodwaters	
Dam	Further Study Needed
Stormwater Detention and Retention Basins	Further Study Needed
Levees	Further Study Needed
Floodwalls	Further Study Needed
Landforms	Recommended
Channel Alterations and Diversions	Further Study Needed
Pump Stations	Not Recommended
Additional Tools	
Engineering Study	Recommended
Fire Suppression Actions	Recommended
FMP Adoption	Recommended
Tribal Mitigation Plan (TMP)	Recommended
Planning Assistance to States (PAS) Project	Recommended

Goals and Mitigation Actions

One of the first steps in an FMP is to identify goals. Goals express what the Tribe wishes to accomplish as a result of the FMP. Although mitigation actions were derived from an existing list of strategies and tools, an effective action should meet one or several of the Tribe's goals for flood risk management. Identifying goals prior to determining actions can serve to guide the decision-making process to ensure selected actions meet overarching goals. As previously stated in the Floodplain Management Goals section, the Tribe identified the following goals for this FMP:

- Improve Emergency Response Capability
- Develop Preventative Measures to Reduce Flood Damages
- Document Flood History

Although the creation of a FMP cannot fully meet the Tribe's goals, it can help the Tribe better understand the options available. The table below summarizes which goals are met by each recommended mitigation action. If one of the following mitigation actions were successfully pursued, it would meet the following goal(s):

Table 4: Goals met by each recommended mitigation action

Recommended Actions	FMP Goals		
	Improve Emergency Response Capability	Develop Preventative Measures to Reduce Flood Damages	Document Flood History
Development of Policies and Land Use Regulations		X	
Flood Warning Systems		X	
EAP	X	X	
Elevation of Buildings		X	
Flood Proofing of Buildings in the Floodplain		X	
Berms and Floodwalls		X	
Information and Education	X	X	X
Flood Insurance	X		
Community Rating System	X		
Emergency Relief	X		
Post-Flood Recovery	X		
Erosion and Sediment Control		X	
Water Quality Enhancement			
Recreational and Educational Opportunities		X	
Preservation of Cultural Resources			X
Stormwater Detention and Retention Basins		X	
Levees		X	
Landforms		X	
Channel Alternations and Diversions		X	
Engineering Study	X	X	X
Fire Suppression		X	
FMP Adoption			X
TMP Adoption	X		X
PAS Project		X	X

The mitigation actions listed in the table above include actions that were labeled as "recommended" or "further study needed" by the Tribe. Mitigation actions labeled "not recommended" were excluded from the table, because it is assumed such actions will not be pursued.

As shown in the table, the goal "document flood history" will not be met by most of the recommended actions. Actions such as information and education, preservation of cultural resources, and conducting an engineering study will provide information on Skull Valley's flood history, because pursuing them requires knowledge and research on the Reservation's flood history. However, as stated in the Floodplain Management Goals section, this FMP hopes to serve as a central location for all forms of flood records. The Tribe's goal to document flood history is met by the creation of this FMP, because Skull Valley's flood history is documented herein, and flood records can be found as attachments. The FMP, a living document, should be continually updated. Therefore, as more information is gathered on the flood history, or as future flood records are developed, they can be integrated into this FMP.

Action Plan

Development of Land Policies and Land Use Regulations

Recommended

This mitigation action covers both development policies and land use regulations. These policies help guide the Tribe's decisions of where new development or redevelopment should occur. This tool is acceptable as an effective measure to protect existing homes, businesses, and new developments from flooding.

According to the Tribe, there are no existing land policies or land use regulations in Skull Valley pertaining to flooding. Looking to the future, as the Reservation develops and more houses and businesses are built, the Tribe hopes to implement such policies to ensure any new development is protected from flooding. It is up to the Tribal Council to implement and enforce such policies.

Flood Warning Systems

Recommended

Flood warning systems include several components and can be part of a process written into an emergency response plan. The first component is a flood threat recognition system. The next component is a warning dissemination system for risk communication. Emergency response follows and should be integrated through use of an emergency response plan. This means collaborative involvement across several professional groups, including emergency responders and the Tribal community. Examples include:

- Flood forecast inundation maps
- Warning dissemination through flood warning lights and sirens
- Warning dissemination through multi-media

According to NOAA, Floods in Skull Valley often occur unexpectedly and with little warning. A flood warning system could be a useful tool to safeguard the Reservation from future flood events. The NWS currently issues flash flood warnings via text messages. Text messages are sent to all smartphones in the area where the flash flood is expected to be occur. Tribal members on the Reservation who own smartphones should receive a text message with a flash flood warning, should one occur in Skull Valley. Another option for the Tribe is to purchase a NOAA weather radio, which is available online or at certain stores. Flash flood warnings are also issued via cable TV and can be found at www.weather.gov. The goal for NWS is to issue warnings with one hour lead time; however, warning times vary depending on thunderstorm genesis, travel time, and intensity of rainfall.

Tooele County currently uses Alertsense, an emergency communication service, to notify residents of emergencies via phone, email, or text. Unlike the NWS's warning system, Altersense does not require smartphones. If the Tribe wants to participate in this program, they can enroll at www.tcem.org.

Warning systems can also be useful to warn of potential wildfires. If someone in the Reservation sees smoke, they should call 911 to access local dispatchers. Large and active wildfires occurring in Utah can be found in www.utahfireinfo.gov, which is updated daily. Alerting authorities as

quickly as possible could suppress the fire and reduce damage. Reducing damages caused by wildfires also reduces flood risk.

Emergency Action Plan

Recommended

Corresponding with the previously mentioned flood warning system is an EAP for flooding. Generally speaking, EAPs include several topics related to preparing for, responding to, and mitigating against the risk, including:

- Flood risk management
- Emergency communications
- Emergency response
- After event actions

Flood Risk Adaptive Measures to Consider

Flood risk adaptive measures are construction projects and/or operational actions that can be taken to lessen the likelihood of damages from flooding. Careful consideration needs to be made before selecting the appropriate flood risk adaptive measure. Items to consider are:

- Probability/frequency of flooding
- Depth of flood flows
- Velocity of flood flows
- Duration of the flood event
- Cost of the construction project or actions
- Financial benefits from the measures taken, including reduction in
    - Flood insurance costs, if applicable
    - Structural and content damage costs

An EAP can help the Tribe be prepared in case of a flood event. It can include an emergency evacuation route and a checklist for homeowners. During the kick-off meeting for this FMP, an EAP was deemed a priority for the Tribe.

In order to develop an EAP, the Tribe has two options: they can hire a contractor or they can work with the DEM. Contractors work quickly and have more resources at their disposal. However, hiring a contractor can cost the Tribe between $10,000 and upwards of $40,000. Working with the DEM comes at no cost to the Tribe. To develop an EAP with assistance from DEM, the Tribe should contact the DEM Tribal Consultant, Anna Boynton[1]. Ms. Boynton, in coordination with Tara Behunin, Tooele County's Community Support Liaison, can work with the Tribe to develop the EAP. It would take approximately one year to complete.

Elevation of Buildings

Recommended

This mitigation action elevates an existing building to an elevation that is greater than the elevation of the one percent annual chance of exceedance (ACE) flood. FEMA has several mitigation grants that can provide funding for building elevation, including the Hazard Mitigation Grant Program (HMGP). Based on communications with FEMA, a qualified engineer would make sure the building is structurally sound for elevation, and the project would have to meet rigorous FEMA standards for building elevation. This option may be more cost effective than other engineering structural measures. If buildings are elevated on the Reservation, the Tribal Council should ensure any future development is built at the elevated height. This can be enforced by the land policy and land use regulations measure.

Relocation of Buildings

Not Recommended

This flood risk adaptive measure requires physically moving the at-risk structure away from the floodplain area. The Tribe does not recommend this action, because the community would rather flood proof existing buildings in the floodplain than relocate. Several homes on the Reservation are damaged and currently uninhabitable. The Tribe can consider removing or demolishing these homes to create space for new, safer, and flood proofed structures.

[1] Anna Boynton, Utah DEM Tribal Consultant, can be reached at aboynton@utah.gov.

Flood Proofing Buildings in the Floodplain

Recommended

Flood proofing is a possible approach to defending against rising floodwaters outside a residential home or commercial building. Two approaches are wet or dry flood proofing measures (explained below). Should the Skull Valley Band of Goshute join the National Flood Insurance Program (NFIP), it should be noted that flood proofing may not reduce the cost of flood insurance for residential structures. Only commercial, industrial, and accessory structures qualify for reduced costs on the NFIP.

Wet Flood Proofing

FEMA defines wet flood proofing as permanent or temporary/contingent measures applied to a structure and/or its contents to prevent or provide resistance to damage by allowing floodwaters to enter certain parts of the structure, such as a basement, in order to protect other parts of the structure. This flood adaptive measure is applicable either as a stand-alone measure or as a measure combined with other measures, such as elevation. As a stand-alone measure, all construction materials and finishing materials need to be water resistant and all utilities must be elevated above the design flood elevation. Wet flood proofing is applicable and generally advisable for commercial and industrial structures when combined with a flood warning and flood preparedness plan. Property owners wishing to utilize this method should contact their local Floodplain Administrator but should be aware that it will not reduce flood insurance costs for residential buildings.

Wet flood proofing may not be advisable for the Tribe because this measure is generally not a good option for residential applications. The structural and health risks associated with allowing flood waters to enter a residence often outweigh the benefits of wet flood proofing.

Dry Flood Proofing

Dry flood proofing involves sealing the walls of a structure with water-proofing compounds, impermeable sheeting, or other materials and using closures to cover and seal openings from floodwaters, as shown in Figure 14.

This tool is acceptable for commercial and industrial structures and can be used in residential homes in specific circumstances, such as when flood waters are not anticipated to be deep or move at fast speeds. This tool achieves flood risk reduction, but is not recognized by the NFIP for any flood insurance premium rate reduction if applied to a residential structure. Commercial and industrial structures can use this tool and realize an improved flood insurance premium. Based on laboratory tests, a "conventional" built structure can generally only be dry flood proofed up to 3-feet in elevation. A structural analysis of the wall strength would be required for higher protection. Openings into the structure, such as doors and windows below the base flood elevation would need watertight closures to achieve the desired results. Sump pumps and French drain systems should be installed as part of the measure.

Dry flood proofing for residential structures may be applicable in limited situations, but is not an eligible measure to reduce the cost of flood insurance premiums. This tool would be an acceptable application for homes on the outer fringe of the area of the base flood, and/or within the 0.2 percent ACE floodplain (500-year floodplain). These areas are generally impacted by shallow, low velocity floodwaters that cause damage to flooring, HVAC, and other utility equipment low to the floor. In these situations, temporary water-proof barriers to building openings, such as doors, could be installed and foundations could be sealed to prevent infiltration into the home. This would not be an acceptable solution for deep or fast moving floodwaters. This tool would also not be acceptable to a homeowner seeking to lower their flood insurance premiums.

Should the Tribe decide to flood proof existing buildings, there are several FEMA mitigation grants that could fund most of the project. For these potential funding avenues to become available, the Tribe needs to first have an approved and adopted TMP.

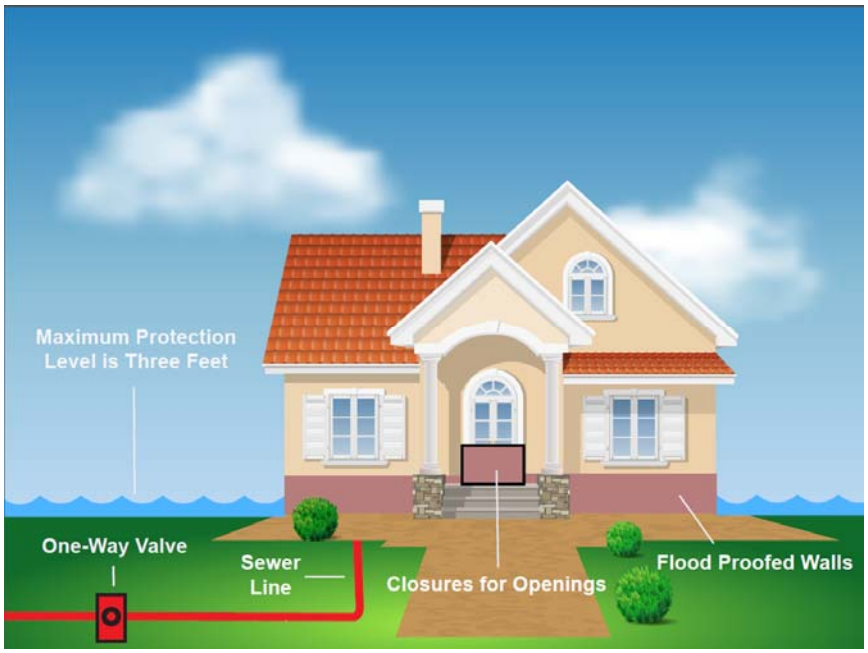

Figure 14: Graphic showing house sealed with water proof walls to protect from floodwaters

Fill or Conversion of a Basement with Main Floor Addition for Buildings

Not Recommended

This technique consists of filling in the existing basement or converting the basement space to an uninhabitable crawl space, without elevating the remainder of the structure. This measure is applicable only if the first floor of the structure is above grade and is higher than the base flood elevation. This action is not recommended because houses on the Reservation do not have basements.

Acquisition of Buildings

Not Recommended

This mitigation action consists of buying the structure and parcel of land. The structure is either demolished or is sold and relocated to a site outside of the high risk floodplain. The purchased land is then converted to passive open space. This is not a recommend this action, because the Tribe has no intention of selling Tribal lands.

BERMS

Recommended

Berms are raised barriers made of soil, which could be effective at diverting water and debris away from homes in the Reservation, as shown in Figure 15. This mitigation action is applicable on a small-scale. It is intended to reduce the frequency of flooding, but currently would not eliminate floodplain regulation or NFIP requirements. In order for berms to be certified as providing flood protection, their designs will have to meet various FEMA requirements.

Berms can be placed around a single structure or a small group of structures. As a measure, berms should be constructed to no higher than six feet above grade and generally cannot raise the elevation of the floodwaters. This requirement ensures the berm will not displace the floodwaters onto an adjacent property and increase its risk and cost of flooding.

Figure 15: Graphic of berm (left) protecting house from floodwaters

INFORMATION AND EDUCATION

Recommended

A primary purpose of the FMP is to communicate flood risks and increase public understanding of flood hazards. There are various ways the Tribal community can inform each other of flood risks to the Reservation.

Flood Risk Mapping: Floodplain maps are an effective way of informing the community of flood risks. Skull Valley does not currently have floodplain maps for the Reservation, but as a spin-off of this FMP project, USACE will develop floodplain maps for Skull Valley. The community will have floodplain maps as early as 2019. This FMP produced maps for the Tribe that delineate the alluvial fans within the Reservation (an example is shown in Figure 16). Although the alluvial fan delineation maps are not equivalent to floodplain mapping, they can serve to inform the Tribal community of potential flood risk areas within the Reservation.

Information to Prepare and Recover: A number of Federal, State, and local agencies, such as the American Red Cross, FEMA, and the NFIP, have prepared detailed pamphlets, books and other information pieces on how to prevent, prepare for, and recover from a flood event. The Tribal community should continue to collect, review, and maintain a sufficient library of information to assist residents with these topics. This information should be readily available to Tribal members via the Internet or a local library; perhaps documents can be stored in the Community Center. Information on other topics related to flooding, such as water quality and water conservation, should be collected in a similar fashion as the flood hazard and prevention information.

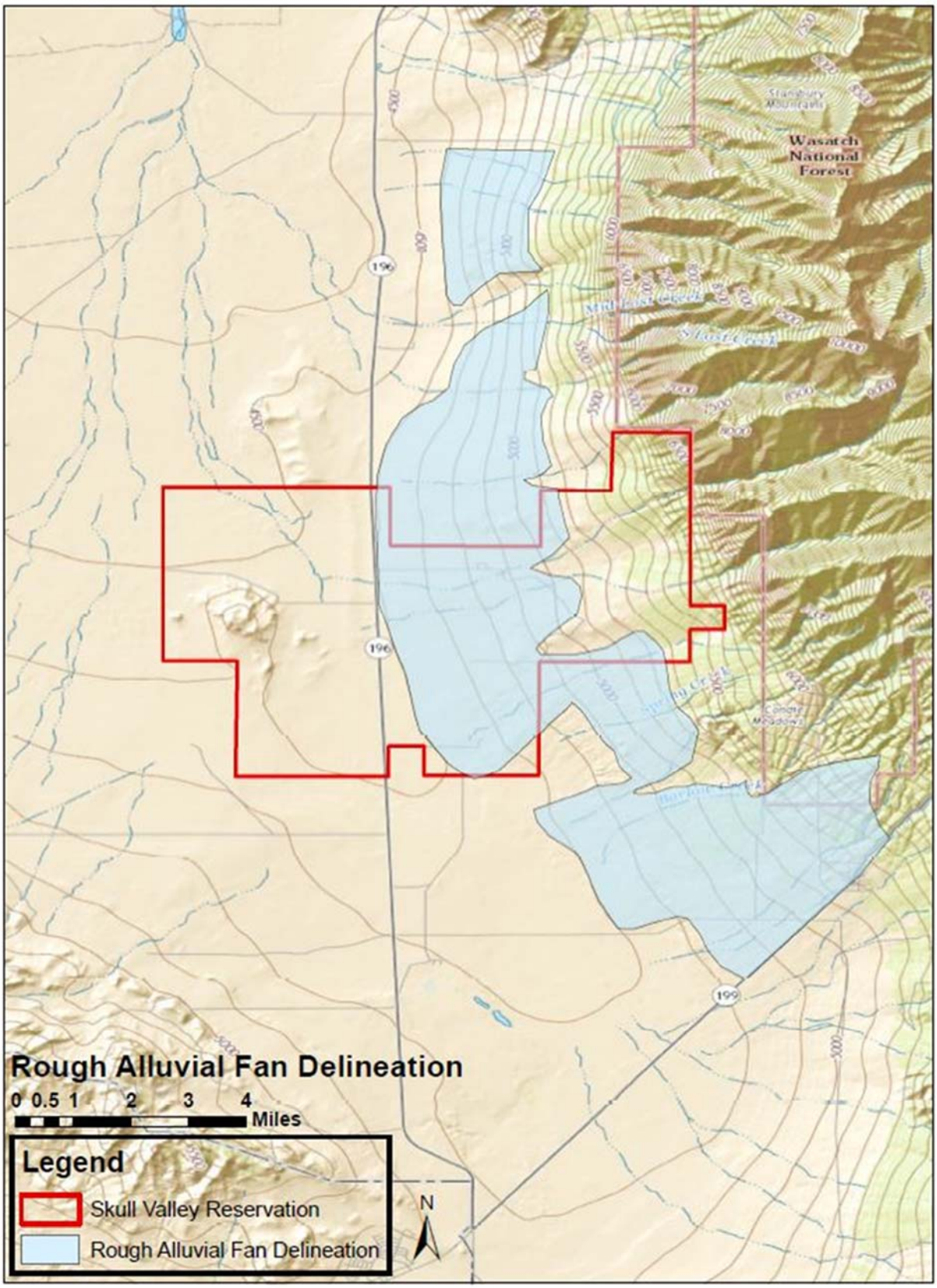

Figure 16: Rough alluvial fan delineation for the Skull Valley Band of Goshute Reservation

Flood Insurance

Further Study Needed

Similar to other types of insurance, flood insurance transfers the financial risk of being impacted by a flood to a broader population, even during a catastrophic event. Depending on the disaster and the situation, funds become available in the form of insurance claims or through low-interest loans and grants to recover from a flood event and to mitigate against future flood risks. It is the individual property owners as well as the community who share the responsibility of managing flood risks by having flood insurance that will cover damages.

According to FEMA, the Skull Valley Band of Goshute would need to submit a one-page application, a resolution, and an ordinance, should they wish to apply. The lowest level of ordinance does not require floodplain maps. However, a lower ordinance also provides less coverage. Ordinances can be updated to match the level of mapping, after Skull Valley develops floodplain maps that meet FEMA standards in the future. In order to participate, the Tribe would need to have a Floodplain Administrator, who can be a member of the Tribe. There are other Tribes that participate in the NFIP, but they tend to be larger in population, have bigger landmass, and have more resources available when compared to the Skull Valley Band of Goshute. Before participating in the NFIP, the Tribe should ensure that those living on the Reservation can afford premiums. Should the Tribe decide to participate, they would be the first Tribe in Utah to do so. For more information on the NFIP, the Tribe can contact Barbara Fitzpatrick[2], Senior Program Specialist at FEMA Region VIII.

Community Rating System

Further Study Needed

The Community Rating System (CRS) is a national program through FEMA and the NFIP that evaluates a community's floodplain management efforts and rewards those efforts with reductions on NFIP premiums based on the community's floodplain management performance (FEMA, May 2016). To get reduced premiums, a variety of proactive steps can be taken. This FMP is an element that can improve the community's performance in the program and lead to

[2] Barbara Fitzpatrick, FEMA Region VIII Senior Program Specialist, can be reached at barbara.fitzpatrick@fema.dhs.gov.

premium discounts. Other activities, such as higher floodplain regulations, dedication of open space in the floodplain, and flood risk awareness outreach can qualify for premium discounts. If the Tribe wishes to participate in the CRS, they would first need to enroll and exceed required standards in the NFIP.

Tax Adjustments and Rebates

Not Recommended

This is not applicable as there is no form of taxation on the Reservation.

Emergency Relief

Further Study Needed

This information can be included in the Tribe's TMP. Having this information on-hand facilitates the opportunity to use emergency relief funds and hazard mitigation grants when they become available through a Presidential Disaster Declaration, a Tribal Disaster Declaration, or from the State of Utah, Tooele County, and Federal agencies. Emergency funds can help address the Reservation's needs after an event and reduce the impacts of the flood hazards.

Federal agencies, the State of Utah, and Tooele County are available to help the Tribe with emergency relief. FEMA grants, such as the HMGP, may be available to the Tribe, should they declare a disaster. This grant and most FEMA emergency grants, however, can only be awarded to Tribes with approved and adopted TMPs. NRCS can assist the Skull Valley Band of Goshute through the Emergency Watershed Protection Program (EWP), which provides funding for emergency construction projects that address watershed impairments. Funding may be limited in this program; in fact EWP funds were not available for the Tribe after the 2013 flood event, according to NRCS. Regardless, NRCS was able to provide emergency assistance by obtaining funding from the BIA for the emergency stabilization efforts.

Under certain circumstances, the USACE can provide emergency relief to the Tribe through Public Law 84-99, which authorizes the USACE to provide disaster preparedness, advance measures, flood fighting, rehabilitation and inspection, emergency water supplies, drought

assistance, and hazard mitigation. In order to request assistance, the Tribe must first reach out to the USACE or request assistance through the State.

If the Tribe is in a state of emergency, they can also contact the DEM Tribal liaison, who can help them identify resources on behalf of the State of Utah. In order to obtain State funding to assist the Tribe, a declaration must be made. A declaration is made when Tribal leaders fill out a declaration document, detailing if the Tribe is overwhelmed and/or running out of resources. The letter can be emailed or scanned to the State Emergency Operation Center. More detailed information and resources on emergency relief can be found in Appendix C.

Post-Flood Recovery Processes

Recommended

The Skull Valley Band of Goshute should establish procedures to assess damages after a flood event. In addition, a repository should be established to store post-flood disaster information on flood safety, clean-up, and mitigation options for impacted properties. After a flood event, FEMA advises the homeowner to record damages by taking pictures or videos before cleaning up. When returning to a flooded home, step inside carefully and check for loose power lines and gas leaks. Electricity and gas should be turned off. Homeowners should check for structural damage - Are there cracks in the walls? Are the floors slanted? Professional help may be needed to repair broken walls, floors, or foundations. More information can be found in FEMA's publication, "Repairing Your Flooded Home." A copy of this publication was given to the Tribe during the April 2017 visit and is available here: https://permanent.access.gpo.gov/gpo2638/fema_p234_complete.pdf.

Wetlands Protection and Restoration

Not Recommended

Wetlands play an important role in reducing sediment and other pollutants from entering a stream channel and can reduce flood waters in small intensity storms. The Tribe does not recommend this action because there are no wetlands in the Reservation.

Erosion and Sediment Control

Recommended

Managing sedimentation and erosion reduces flood risk. In Skull Valley, sedimentation could be reduced through different engineered projects such as construction of berms and dams. Erosion can be managed by planting non-invasive, native, and fire resistant vegetation. The NRCS, BIA, and BLM have taken and continue to undertake erosion and sediment management projects in the Skull Valley area. The NRCS and BIA constructed earthen berms as part of the emergency stabilization efforts following the 2013 and 2014 flood events. The BLM also seeded areas above the Reservation that were burnt in the 2013 Patch Springs fire to reduce surface runoff and threats of flash flooding.

Water Quality Enhancement

Recommended

Recommended actions to enhance water quality are similar to the actions recommended for erosion and sediment management because water quality can improve when sedimentation is reduced and erosion is managed. Engineered projects, such as earthen berms and vegetation planting to reduce runoff would in turn improve water quality.

Land use regulations could also be implemented, such as establishing pre- and post- construction best management practices (BMPs). Establishing BMPs can help the Tribe identify and implement practices to achieve desired water quality objectives and conditions.

As an educational opportunity, a local group could form within the Tribe to monitor water quality in the Reservation. The group could then communicate findings to the Tribe and offer guidance on how to enhance water quality in the Reservation.

Enhancement of Recreational and Educational Opportunities

Recommended

In order to enhance educational opportunities, the Tribal community should continue to collect, review and maintain sufficient information on flood risk management in the Reservation. This information should be readily available to Tribal members.

Based on conversations with Tribal members, fishing and hunting are popular recreational activities on the Reservation. Preserving spaces for these activities would enhance recreation. Preserving recreational spaces, especially spaces located near Indian Hickman and Dry Canyons, would prevent development from taking place, which could in turn reduce flood risk. Avoiding developing in flood prone areas would prevent any damage to potential structures and simultaneously promote recreational activities in those areas.

Preservation of Cultural Resources

Recommended

Skull Valley holds a plethora of cultural resources. If the Tribe has not done so already, they could update or develop an Archeological Resource Study for the area, including the Indian Hickman watershed. As structural projects are proposed that are related to this FMP, these cultural resources should be considered and protected when discovered. Structural projects involving heavy equipment, such as bulldozers, may demolish, fragment, and/or redistribute cultural and sacred resources. It is important to plan how to avoid cultural resource areas prior to the implementation of a project.

According to BLM, protection from flooding, in most cases, can be accomplished by ensuring continuous vegetative cover and construction of erosion control devices where appropriate. The former can be difficult given the climatic conditions in Skull Valley. BLM is available to provide advice on how to encourage the growth of vegetation that will hold topsoil under flood conditions. Maintaining the integrity of topsoil will reduce the likelihood of damage to cultural resources from flooding.

Dams

Further Study Needed

Dams can be highly effective tools for managing flood flows as they can prevent costly damages induced by flooding and debris flows. A dry dam could be an effective option in Skull Valley. Dry dams hold back heavy debris, while allowing water and light debris to wash out. If a dry dam were built in Indian Hickman, for example, the cost of the dam would be dependent on its size and location. If a dam were built on the Reservation, it will important to maintain the dam by removing debris after each flow event, which could be labor intensive. Excavation can occur behind the dam to trap more debris. Although a dry dam may be feasible in the Reservation, it is also a costly option. The Tribe would have to find a funding source and engineer to design and build the dam.

Stormwater Detention and Retention Basins

Further Study Needed

The most appropriate location for stormwater detention structures is in the middle and upper reaches of watersheds. Before installing a storm water detention basin, the Tribe should examine its appropriateness. Detention and retention basins are good for recharging well water since they can be excavated into the ground or be built above ground. They are useful in holding runoff and flood waters, but work poorly to hold back large debris flows. Detention basins hold water for short periods of time, while retention basins can hold water for other uses, such as water supply. Retention basins are more expensive and harder to maintain, and should include a water distribution system.

Levees

Further Study Needed

Levees in Skull Valley could be a natural companion to channel distribution. They could be placed between the community and Indian Hickman to divert water away from the residences. The length of the levee would be a key cost driver, since the cost of 2 to 3 miles of levees is comparable to a dry dam. If the Tribe is interested in building levees in the Reservation, further

study should be conducted on this measure. Additionally, the Tribe would have to find a funding source and engineer to design and build the levees.

Floodwalls

Further Study Needed

During a TAG meeting in April 2017, the Tribe recommended floodwalls as a potential mitigation action. Floodwalls are concrete walls that can be placed around homes to divert water. Following the April meeting, the USACE provided implementation advice on the engineering measures and advised that floodwalls may be a poor choice for Skull Valley. Floodwalls are good at holding water, but they hold debris flows poorly. They are not anchored to the ground, and if a strong debris flow were to strike a floodwall, the wall could collapse. This mitigation action should be further evaluated before it is pursued for implementation. If the Tribe wants floodwalls in the Reservation, perhaps they could be a supplement to other measures.

Landforms

Recommended

Skull Valley could potentially benefit from installing structural measures that are less substantial than a levee, but could direct floodwaters away from structures. A feasibility study could be conducted to determine whether landforms, such as terraces could be beneficial. Terraces work like speed bumps by creating a labyrinth for the flow and holding back debris. If the terrace is appropriately placed and is large enough, it could hold back debris flows. Terraces would have to be maintained after each debris flow event. The debris can be excavated for other uses or be reformed into the embankment as reinforcement.

Channel Alterations and Diversions

Further Study Needed

These issues relate to managing the flow of the floodwaters and the feasibility of a channel alteration. Channels created by the alluvial fan in Skull Valley could be redirected away from the Tribal community. New channels can also be excavated to keep debris flows away from residences. This tool may not work well as a standalone alternative, although it could

complement a dry dam or levee. Alluvial fans create new channels and/or move existing channels with each debris flow event. A channel alteration would be effective if it happens to be in the path of the debris flow, which is difficult to predict given the erratic nature of alluvial fans. Having a levee or dam to stop debris flows, while allowing channel alterations to divert any remaining debris flow would prove more effective.

Pump Stations

Not Recommended

Pump stations for managing floodwaters are important to the function of a levee system. They pump out water that has collected in a levee system. Pump stations may not prove feasible in Skull Valley because they need a body of water to function, and there are no perennial streams in the Reservation. Pump stations do not work well with sediment and are generally ineffective options for arid areas with alluvial fan flooding. Since Skull Valley's topography is a downward slope, pump stations may not be required. Gravity can allow flows to drain naturally. Also, pump stations have expensive mechanical needs and require high maintenance.

Engineering Study

Recommended

It is unknown whether many of the recommended actions, mainly the recommended structural actions, such as a dry dam and levees, among others, are feasible in Skull Valley. The Tribe recommends conducting an engineering study to determine which actions are the most efficient and effective. Under the Planning Assistance to States (PAS) program, the USACE could take a more in-depth look at the recommended actions in this FMP. For Tribes, a portion of the required cost share for a study is waived. If the study is at or under the waived dollar amount, then it comes at no cost to the Tribe.

Fire Suppression Actions

Recommended

The Tribe cannot isolate flood risk management from fire suppression activities. Wildfires, which are common in the Stansbury Mountains, exacerbate flooding in Skull Valley. Actions to manage flooding should include fire suppression actions. Fire could be suppressed in Skull Valley by creating fuel breaks along roads or around homes, as shown in Figure 17; restoring and reseeding areas dominated by cheat grass to perennial bunch grass, forbs, and shrubs; and by implementing burn bans year-round or during dry periods.

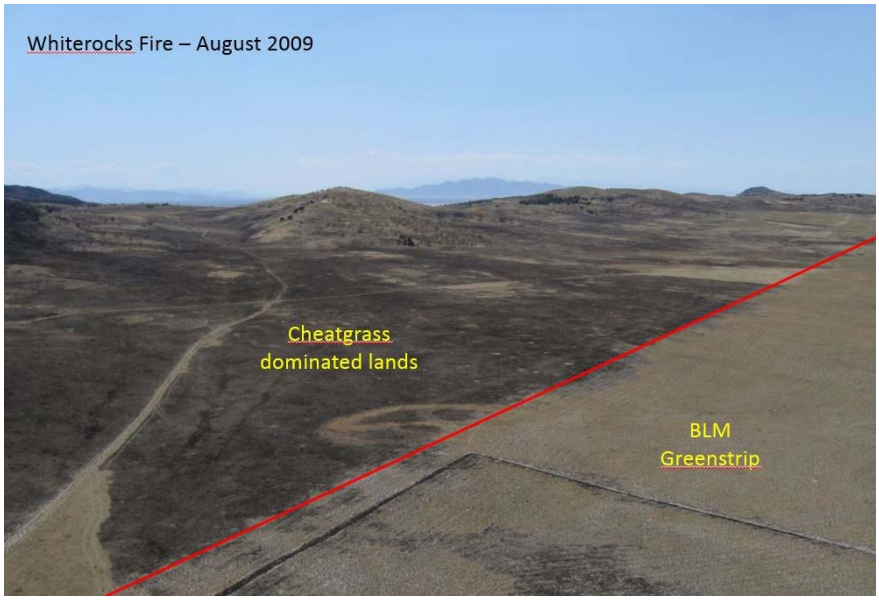

Figure 17: Fuel break example. The fire burned a section of State Land that was predominantly cheat grass and stopped or was slowed when it hit BLM lands that were seeded to perennial species

Floodplain Management Plan Adoption

Recommended

This FMP will be the culmination of participation and work by the TAG over an extended period of time. Once completed, the FMP will document these efforts and create recommendations to implement strategies and tools to promote flood risk management. To strengthen the resolve of this FMP, a public approval process should be conducted in the Tribal community. The FMP should be updated as more input is received, or as more information is gathered. Establishing an active FMP will help the Skull Valley Band of Goshute collaborate with other agencies, enable

potential future funding opportunities, and improve conditions in the Reservation by creating a path toward flood risk education and improved floodplain management.

Tribal Mitigation Plan Adoption

Recommended

A TMP identifies risks and vulnerabilities associated with natural disasters, and develops long-term strategies for protecting people, resources, and property in future hazard events. The mitigation plan also identifies actions and projects to implement the mitigation strategy. If the Tribe were to adopt a TMP, they would be eligible for certain types of non-emergency disaster assistance and FEMA grants to implement mitigation projects, some of which are described in the FMP, such as flood proofing. The FMP fulfills many of the requirements necessary to develop a TMP, including identifying hazards and providing a history of past hazard events. Should the Tribe seek to adopt a TMP, their efforts would be significantly reduced, since the information has already been collected. The Tribe would focus on adopting the TMP per FEMA guidance. For more information, the Tribe can contact Scott Roscoe[3], Tribal Hazard Mitigation Specialist at FEMA Region VIII.

Planning Assistance to States Project

Recommended

Under the Water Resources Development Act of 1974, the USACE can provide States, local governments, non-Federal entities, and Native American Indian Tribes assistance in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. Typical studies offer only a planning level of detail; they do not include detailed design for project construction. PAS projects can cover water quality studies, floodplain management studies, non-structural assessments, post-wildfire modeling, floodplain mapping, groundwater modeling, alluvial fan flooding modeling and mapping, emergency evacuation planning, and/or other water resource planning investigations. According to Implementation Guidance for Section 1119 of the Water Resources Development Act (WRDA) 2016, as amended, Indian Tribes are waived a portion of the required cost share for a PAS

[3] Scott Roscoe, FEMA Region VIII Tribal Hazard Mitigation Specialist, can be reached at scott.roscoe@fema.dhs.gov.

project. A project at or under the waived amount would come at no cost to the Tribe. Should the Tribe wish to further investigate water resource issues on the Reservation, a PAS project could be a next step following the FMP and floodplain mapping.

PRIORITIZATION OF MITIGATION ACTIONS

This section typically details how strategies and tools described above can be prioritized and developed for the goals and objectives to be achieved. The recommended actions need not be developed all at once; considering an action prioritization will aid the Tribe in detailing next steps to achieve its goals. A top priority is identifying reliable funding mechanisms to support the Tribe in the level of effort necessary to manage the floodplain. Please refer to Appendix C for additional opportunities and resources.

The table below prioritizes mitigation actions that were labeled "recommended" or "further study needed" in the Action Plan. Prioritization was made using the following criteria: availability of funding, level of feasibility, and effectiveness at reducing flood risk.

Mitigation actions that can be pursued right away and come at little or no cost to the Tribe were classified as "Primary." Actions that will require larger effort on behalf of the Tribe and partner agencies were classified as "Secondary." Although grants and programs exist to pursue secondary actions, funding may not be readily available to implement them. Actions that are likely not feasible in the near-term were labeled as "Tertiary." These actions include the most expensive mitigation actions and/or actions that are better pursued in the long-term. Tertiary actions are mostly large construction projects that would require further study prior to implementation. These actions would also require significant investments from both the Tribe and partner agencies. Although there are funding programs that provide minimal cost-share to Tribes, these large-scale projects could still prove too expensive in the near-term.

Table 5: Mitigation action prioritization (as primary, secondary, or tertiary)

Priority	Mitigation Action	Contact
Primary	FMP Adoption	Skull Valley Band of Goshute Tribal Council
	TMP Adoption	Scott Roscoe, FEMA Scott.Roscoe@fema.dhs.gov
	PAS Project	Rachael Orellana, USACE Rachael.Orellana@usace.army.mil
	Emergency Action Plan	Anna Boynton, DEM Aboynton@utah.gov
	Engineering Study	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil
	Emergency Relief	Anna Boynton, DEM Aboynton@utah.gov
	Information and Education	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil Matt Phillippi, NRCS Matthew.Phillippi@ut.usda.gov
	Enhancement of Recreation and Educational Opportunities	Skull Valley Band of Goshute Tribal Council; Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil
	Flood Warning System	Brian McInerney, NWS Brian.McInerney@noaa.gov
	Development of Policies and Land Use Regulations	Skull Valley Band of Goshute Tribal Council
	Post-Flood Recovery Processes	Skull Valley Band of Goshute Tribal Council; Scott Roscoe, FEMA Scott.Roscoe@fema.dhs.gov
	Preservation of Cultural Resources	Skull Valley Band of Goshute Tribal Council; Matt Preston, BLM Mpreston@blm.gov
Secondary	Erosion and Sediment Management	Matt Phillippi, NRCS Matthew.Phillippi@ut.usda.gov; Matt Preston, BLM Mpreston@blm.gov

	Water Quality Enhancement	Matt Phillippi, NRCS Matthew.Phillippi@ut.usda.gov; Matt Preston, BLM Mpreston@blm.gov
	Fire Suppression Activities	Matt Preston, BLM Mpreston@blm.gov
	Flood Proofing Buildings in the Floodplain	Scott Roscoe, FEMA Scott.Roscoe@fema.dhs.gov
	Elevation of Buildings	Scott Roscoe, FEMA Scott.Roscoe@fema.dhs.gov
	Flood Insurance	Barbara Fitzpatrick, FEMA Barbara.Fitzpatrick@fema.dhs.gov
Tertiary	Landforms	Tony Beals, NRCS Anthony.Beals@ut.usda.gov; Matt Preston, BLM Mpreston@blm.gov
	Dams	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil Matt Phillippi, NRCS Matthew.Phillippi@ut.usda.gov
	Levees	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil Matt Phillippi, NRCS Matthew.Phillippi@ut.usda.gov
	Channel Alterations and Diversions	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil; Tony Beals, NRCS Anthony.Beals@ut.usda.gov
	Stormwater Detention and Retention Basins	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil; Tony Beals, NRCS Anthony.Beals@ut.usda.gov
	Floodwalls	Rhiannon Kucharski, USACE Rhiannon.L.Kucharski@usace.army.mil
	Community Rating System	Barbara Fitzpatrick, FEMA Barbara.Fitzpatrick@fema.dhs.gov

Plan Maintenance Process

Responsibility for Plan Maintenance

The Skull Valley Goshute Tribe is responsible for maintenance of the FMP. This is a living document that should be updated with new information as implementation of strategies and tools results in risk reduction. It is the recommendation of FEMA that the plan be revisited for potential updates at least once every five years. It is also expected that this FMP will be updated when the Tooele County MHMP is updated.

Monitoring, Evaluation, and Updating the Plan

The information in this FMP helps guide the process to reduce risk. As an understanding of the recommended actions increases, so will the understanding of the evaluation of actions. This section may become a written agreement between the Tribe on how, how often, and in what way the plan may be updated.

Monitoring the Process of Mitigation Actions

Monitoring the process of mitigation actions can be included in the Tribe's Mitigation Plan. This realizes the value of the actions implemented, beyond the single risk of flooding.

Incorporation into Existing Planning Mechanisms

Use of this plan in other documents is a way to maximize the planning investments. It may also provide an opportunity to access hazard mitigation grants when they become available, demonstrating the purpose, intended outcome, and realized risk reduction from actions.

Continued Public Involvement

A public approval process could be conducted in the Tribal community, and continued collaboration with other agencies will facilitate actions and improve conditions on the Reservation by improved floodplain management.

APPENDICES

APPENDIX A – REFERENCES

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APPENDIX B – ACRONYMS

ACE	Annual Chance of Exceedance
BAER	Burned Area Emergency Response
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CDBG	Community Development Block Grants
cfs	cubic feet per second
CRS	Community Rating System
DEM	(Utah) Department of Emergency Management
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESR	Emergency Stabilization and Rehabilitation
EWP	Emergency Watershed Protection Program
FIFM-TF	Federal Interagency Floodplain Management Task Force
FMA	Flood Mitigation Assistance
FMP	Floodplain Management Plan
HMGP	Hazard Mitigation Grant Program
HUD	Housing and Urban Development
NFIP	National Flood Insurance Program
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
PAS	Planning Assistance to States
PDM	Pre-Disaster Mitigation Program
TAG	Technical Advisory Group
TMP	Tribal Mitigation Plan
UDOT	Utah Department of Transportation
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
WFPO	Watershed and Flood Prevention Operations Program
WRDA	Water Resources Development Act

APPENDIX C – FLOOD RISK MANAGEMENT, FLOODPLAIN MANAGEMENT, AND ECOSYSTEM RESTORATION SUPPORT PROGRAMS AND OPPORTUNITIES

Table C-1. Ecosystem Restoration Support Programs and Opportunities

Floodplain Management and Disaster Response Funding Opportunities and Resources					
Funding Agency	**Program**	Pre-Disaster	Post-Disaster	Ecosystem Restoration	
Bureau of Indian Affairs	Water Management, Planning, and Pre-Development Program			X	This program assists Tribes in managing, conserving, and utilizing trust water resources. The program aims to provide the necessary technical research, studies and other information for Tribes to successfully manage trust lands and public domain allotments. Tribes can submit a funding request through the Bureau of Indian Affairs Office of Trust Resources. https://www.bia.gov/WhoWeAre/BIA/OTS/NaturalResources/Water/index.htm
Department of Homeland Security (DHS), FEMA, NDCNR Bureau of Corrective Actions (BCA), NDEM	Clean Water Act Section 319 Grants	X		X	This program provides grants to State agencies to implement non-point source programs, including support for nonstructural watershed resource restoration activities. https://www.epa.gov/nps/319-grant-program-states-and-territories
Federal Emergency Management Agency (FEMA)	Hazard Mitigation Grant Program (HMGP)		X		This program provides grants to implement long-term hazard mitigation measures after a major disaster declaration. https://www.fema.gov/hazard-mitigation-grant-program

	Pre-Disaster Mitigation Grant Program (PDM)	X			This program provides funds for hazard mitigation planning and implementation of mitigation projects prior to a disaster event. https://www.fema.gov/pre-disaster-mitigation-grant-program
	Hazard Mitigation Funding Under Section 406 (Stafford Act)		X		This FEMA program provides funds for the repair of disaster-damaged facilities that directly reduce the potential of future, similar damages to the repaired facility by subsequent disaster events. https://www.fema.gov/95261-hazard-mitigation-funding-under-section-406-stafford-act
	Emergency Management Performance Grant	X			This program assists in the development, maintenance and improvement of State, tribal and local emergency management capabilities. https://www.fema.gov/emergency-management-performance-grant-program
	National Dam Safety Program (NDSP)	X			This program provides financial assistance to the States for strengthening their dam safety programs. https://www.fema.gov/national-dam-safety-program
	National Flood Insurance Program	X			This program enables property owners to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. https://www.fema.gov/national-flood-insurance-program

	Flood Mitigation Assistance	X			This program provides funding to implement measures to reduce or eliminate the long term risk of flood damage. https://www.fema.gov/flood-mitigation-assistance-grant-program
	Public Assistance Grant Program		X		The mission of FEMA's PA Grant Program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit
	Homeland Security Grant Programs	X			These programs provide funding to assist State, Tribal, and local governments to maintain and improve plans, facilities and equipment. They also fund disaster preparedness exercises and training for emergency services. https://www.fema.gov/homeland-security-grant-program
National Science Foundation (NSF)	Decision, Risk, and Management Sciences Program (DRMS)	X			This program provides grants for small-scale, exploratory, high-risk research having a severe urgency with regard to natural or anthropogenic disasters and similar unanticipated events. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423&org=SES
	Engineering for Natural Hazards (ENH) Program	X	X		NSF provides funding for research and related educational activities on hazards. https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505177

U.S. Army Corps of Engineers (USACE)	USACE Environmental Laboratory			X	This program provides guidance for implementing environmental programs as ecosystem restoration and reuse of dredged materials. http://www.erdc.usace.army.mil/Locations/EL.aspx
	Silver Jackets	X			The Silver Jackets is an innovative program that provides an opportunity to consistently bring together multiple State, Federal, and sometimes Tribal and local agencies to learn from one another and jointly apply resources to reduce flood risk. The Silver Jackets teams are state-led interagency teams. Often, no single agency has all the answers, but often multiple programs can be leveraged to provide a cohesive solution. https://silverjackets.nfrmp.us/
	Tribal Partnership Program	X		X	The Tribal Partnership Program provides an opportunity to study typical problems and opportunities related to: flood risk management, ecosystem restoration and protection, the preservation of cultural and natural resources, and watershed assessments and planning activities. http://www.usace.army.mil/Missions/Civil-Works/Tribal-Nations/
	Continuing Authorities Program	X		X	The Continuing Authorities Program (CAP) is a collection of water resource authorities issued under several different laws. Congress delegated its authority to approve certain projects, up to specified dollar amounts (subject to availability of funds) to the Chief of Engineers. http://www.nae.usace.army.mil/Missions/Public-Services/Continuing-Authorities-Program/
	International and Interagency Support	X	X	X	Interagency and International Services (IIS) is the U.S. Army Corps of Engineers program providing technical assistance to non-Department of Defense (DoD) Federal agencies, State and local governments, Tribal nations, private U.S. firms, international organizations, and foreign governments. Most IIS work is funded on a reimbursable basis. The Corps provides engineering and construction services, environmental restoration and management services, research and

					development assistance, management of water and land related natural resources, relief and recovery work and other management and technical services. http://www.usace.army.mil/Missions/Military-Missions/Interagency-International-Support/
	Emergency Operations	X	X		Under the Flood Control and Coastal Emergency Act, the USACE provides disaster preparedness and response services and advanced planning measures designed to reduce the amount of damage caused by an impending disaster. The USACE is prepared and ready to respond to natural and man-made disasters. http://www.usace.army.mil/Missions/Emergency-Operations/
	Flood Plain Management Services	X		X	This program provides technical support for effective flood plain management. http://www.nae.usace.army.mil/Missions/Public-Services/Flood-Plain-Management-Services/
	Planning Assistance to States	X		X	States, local governments and Native American Tribes often have needs in planning for water and related resources of a drainage basin or larger region of a State, for which the Corps of Engineers has expertise. The needed planning assistance is determined by the individual States and Tribes. Typical studies are only undertaken at the planning level of detail; they do not include detailed design for project construction. The studies generally involve the analysis of existing data for planning purposes using standard engineering techniques although some data collection is often necessary. Most studies become the basis for State or Tribal and local planning decisions. www.iwr.usace.army.mil/Portals/70/docs/frmp/PAS_Factsheet_13SEP12.pdf
U.S. Department of Agriculture (USDA)	Community Facilities Guaranteed Loan Program	X			This program provides an incentive for commercial lending to develop essential community facilities, such as fire stations, police stations, and other public buildings. https://www.rd.usda.gov/programs-services/community-facilities-guaranteed-loan-program

	Community Facilities Direct Loan & Grant Program	X			This program provides affordable funding to develop essential community facilities in rural areas. An essential community facility is defined as a facility that provides an essential service to the local community for the orderly development of the community in a primarily rural area, and does not include private, commercial or business undertakings. https://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program
	Rural Development Programs and Grants	X			USDA Rural Development has a $213 billion portfolio of loans, and administered $38 billion in loans, loan guarantees and grants through our programs in the last fiscal year. Offers loans, grants and loan guarantees to support essential services such as housing, economic development, health care, first responder services and equipment, and water, electric and communications infrastructure. Promotes economic development by supporting loans to businesses through banks, credit unions and community-managed lending pools. Offers technical assistance and information to help agricultural producers and cooperatives get started and improve the effectiveness of their operations. https://www.rd.usda.gov/files/RD_ProgramMatrix.pdf
USDA Natural Resource Conservation Service (NRCS)	Natural Resources Conservation Service - Financial Assistance Programs	X			NRCS offers voluntary programs to eligible landowners and agricultural producers to provide financial and technical assistance to help manage natural resources in a sustainable manner. Through these programs the agency approves contracts to provide financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land. https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/
	Watershed Protection and Flood Prevention	X			This program provides funding for soil conservation, development, utilization and disposal of water, and conservation as well as the proper use and conservation of land. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcs143_008271

	Watershed Program	X		X	Through the Watershed Programs, NRCS provides technical and financial assistance to States, local governments and Tribes (project sponsors) to plan and implement authorized watershed project plans for the purpose of: watershed protection, flood mitigation, water quality improvements, soil erosion reduction, rural, municipal and industrial water supply, irrigation, water management, sediment control, fish and wildlife enhancement, wetlands and wetland function creation and restoration, groundwater recharge, easements, wetland and, floodplain conservation, hydropower, watershed dam rehabilitation. http://www.nrcs.usda.gov/programs/watershed/index.html
	Emergency Watershed Protection Program		X		The purpose of the Emergency Watershed Protection (EWP) program is to undertake emergency measures, including the purchase of flood plain easements, for runoff retardation and soil erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed. http://www.nrcs.usda.gov/programs/ewp/
	Emergency Watershed Protection Support Services		X		Additional support services to provide financial and technical assistance to help manage natural resources in a sustainable manner. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/ewpp/?cid=nrcs143_008263
USDA Farm Service Agency	Farm Service Agency Disaster Assistance Programs		X		This program provides emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and livestock damaged by natural disasters. https://www.fsa.usda.gov/programs-and-services/disaster-assistance-program/index
U.S. Economic Development Administration (EDA)	Economic Development Administration Investment Programs	X	X		These programs provide grants that support public works, economic adjustment assistance, and planning. Certain funds are allocated for locations recently hit by major disasters. https://www.eda.gov/programs/eda-programs/
US Environmental Protection Agency (EPA)	Nonpoint Source Pollution Control Grants	X			The program assists Federally-recognized Tribes in developing and implementing polluted runoff control programs and watershed based plans that address critical water quality concerns and achieve positive environmental results. https://www.epa.gov/sites/production/files/2016-01/documents/319_fact_sheet_fy16.pdf

	Water Pollution Control Program Grants	X			The program assists Federally-recognized Tribes in achieving environmental results by providing tribes with the necessary tools to develop water quality programs to protect, improve, and enhance natural resources. https://www.epa.gov/sites/production/files/2016-01/documents/106_fact_sheet_fy_16.pdf
	Wetlands Protection and Development	X		X	This Federal grant program supports State, Tribal, and local efforts to protect wetlands by providing funds to enhance existing programs or develop new programs. http://www.epa.gov/owow/wetlands/initiative/#financial
	Wetlands Program Development	X		X	This program provides funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction and elimination of water pollution. http://www.epa.gov/wetlands/grantguidelines/
U.S. Forest Service (USFS)	Burned Area Emergency Response (BAER)		X		The objective of the BAER program is to determine the need for and to prescribe and implement emergency treatments on Federal Lands to minimize threats to life or property resulting from the effects of a fire or to stabilize and prevent unacceptable degradation to natural and cultural resources. https://www.fs.fed.us/biology/watershed/burnareas/

U.S. Geologic Survey (USGS)	Flood Inundation Mapping Program	X			The USGS Flood Inundation Mapping (FIM) Program helps communities protect lives and property by providing tools and information to help them understand their local flood risks and make cost-effective mitigation decisions. https://water.usgs.gov/osw/flood_inundation/contact.html
U.S. Housing and Urban Development (HUD)	Community Development Block Grants (CDBG)	X	X		Grants to develop viable communities, principally for low and moderate income persons. CDBG funds available through Disaster Recovery Initiative. Contingent upon Presidential Disaster declaration. http://www.hud.gov/offices/cpd/communitydevelopment/programs/
	Disaster Recovery Assistance		X		Disaster relief and recovery assistance in the form of special mortgage financing for rehabilitation of impacted homes. https://www.hudexchange.info/programs/cdbg-dr/
	Sustainable Communities Planning Grant Program	X			This program supports multi-jurisdictional regional efforts that integrate housing, economic development, transportation, water infrastructure and environmental planning, and assists regional entities and consortia of local governments with integrated decision-making. https://portal.hud.gov/hudportal/HUD?src=/hudprograms/sci
	HOME Investment Partnerships Program	X	X		HOME provides formula grants to States and localities that communities use, often in partnership with local nonprofit groups, to fund a wide range of activities that build, buy, and/or rehabilitate affordable housing for rent or home ownership or provide direct rental assistance to low-income people. The construction is up to standard hazard-resistant building codes. https://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home
	Tribal HUD-VASH	X			A demonstration program to offer a permanent home and supportive services to Native American Veterans who are experiencing or at risk of experiencing homelessness. The Tribal HUD-VA Supportive Housing program (Tribal HUD-VASH) will provide rental assistance and supportive services to Native American veterans who are Homeless or At Risk of Homelessness living on or near a reservation or other Indian areas. https://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/tribalhudvash

	Indian Community Development Block Grant (ICDBG) Program	X			Funding is available on a competitive basis (annually). The ICDBG regulations at 24 CFR 1003 and the annual Notice of Funding Availability (NOFA) describe specific requirements. Contact your regional HUD ONAP office for more information and technical assistance. https://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/grants/icdbg
	Indian Housing Block Grant Program (IHBG)	X			IHBG fund appropriations are made available to Tribes based on a formula-based allocation. The funds come from the Native American Housing Assistance and Self-Determination Act (NAHASDA) and have implementing regulations at 24 CFR 1000. NAHASDA Program Guidance 2010-03 discusses uses of IHBG funds. Contact your regional HUD ONAP office for more information and technical assistance. https://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/grants/ihbg
U.S. Small Business Administration	Disaster Loans		X		This program provides low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster- damaged property. https://www.sba.gov/loans-grants/see-what-sba-offers/sba-loan-programs/disaster-loans
University of Oregon					The Pacific Northwest Tribal Climate Change Project through the University of Oregon has developed a comprehensive Tribal Climate Change Guide that provides information on grants and programs providing assistance for tribal climate change efforts. http://tribalclimateguide.uoregon.edu/funding?combine=&field_geography_tid=All&=Apply

APPENDIX D – FEDERAL REQUIREMENT FOR FLOODPLAIN MANAGEMENT PLANS

SECTION 202(c) OF ***WRDA 1996***
FLOOD PLAIN MANAGEMENT PLANS

c) Floodplain Management Plans.
(1) In general. --Section 402 of such Act (33 U.S.C. 701b-12; 100 Stat. 4133) is amended to read as follows: SEC. 402. FLOODPLAIN MANAGEMENT REQUIREMENTS.
a) Compliance with Floodplain Management and Insurance Programs. –Before construction of any project for local flood protection, or any project for hurricane or storm damage reduction, that involves Federal assistance from the Secretary, the non-Federal interest shall agree to participate in and comply with applicable Federal floodplain management and flood insurance programs.
b) Flood Plain Management Plans. --Within 1 year after the date of signing a project cooperation agreement for construction of a project to which subsection a) applies, the non- Federal interest shall prepare a flood plain management plan designed to reduce the impacts of future flood events in the project area. Such plan shall be implemented by the non-Federal interest not later than 1 year after completion of construction of the project.
c) Guidelines. --
(1) In general. --Within 6 months after the date of the enactment of this subsection, the Secretary shall develop guidelines for preparation of floodplain management plans by non-Federal interests under subsection b). Such guidelines shall address potential measures, practices, and policies to reduce loss of life, injuries, damages to property and facilities, public expenditures, and other adverse impacts associated with flooding and to preserve and enhance natural floodplain values.
(2) Limitation on statutory construction. --Nothing on this subsection shall be construed to confer any regulatory authority upon the Secretary or the Director of the Federal Emergency Management Agency.
d) Technical Support. --The Secretary may provide technical support to a non-Federal interest for a project to which subsection a) applies for the development and implementation of plans prepared under subsection b).
(2) Applicability. --The amendment made by paragraph (1) shall apply to any project or separable element thereof with respect to which the Secretary and the non-Federal interest have not entered into a project cooperation agreement on or before the date of the enactment of this Act.

APPENDIX E – FLOOD RECORD

This Appendix contains documents that have recorded historic flood events in the Reservation. The goal is to consolidate available written records of flood history in Skull Valley in one location. This appendix should be updated as more documents are written or become available. As of the day this plan was last updated, this appendix includes:

- Excerpt from book detailing 1878 Shambip Flood, which impacted Skull Valley.
- 2013 Patch Springs Fire Burned Area Emergency Response Plan (BAER).
- 2014 Flood Assessment Response Plan.

THE FLOOD OF 1878

During the early days of Shambip, there were many floods, when sudden cloudbursts would cause the creek to overflow its banks. Sometimes cellars were filled with water and crops were damaged. By far the most disastrous flood occurred in the summer of 1878. An account of it is given in the Grantsville Stake Manuscript History as follows:

"On the 23rd of July 1878 occurred the largest and most destructive flood since the settlement was made. Clouds had been gathering each afternoon for a number of days, looking very threatening, but would finally pass off without rain. On this particular day two very dark and heavy clouds formed, one to the southwest and one to the northwest, and seemed to travel toward each other, meeting on Johnson Pass, and then began the most torrential rain ever known in this locality. The amount of water that fell seemed to be about equally divided, one half going west into Skull Valley, the other half going east into Rush Valley. The part that went west did little or no damage and improved the road on the west side of Johnson Pass very much. Since the first settlement of the place, a large boulder weighing many tons had lain in the narrows on the west side, so blocking the passage as to make it very difficult for wagons to go through it. Considerable money had at different times been spent in blasting the rock away, but it was still far from a good mountain road. The water rushed down the canyon with such force as to lift this immense stone out and carry it down the canyon several hundred yards, leaving it almost buried in gravel and leaving a fairly good mountain road all the way down the canyon.

"On the east side the case was quite different. The stream was so large and swift that it carried practically everything before it. A number of Indians were camped in the creek bottom, not far below the head of Clover Creek, and they were unable to reach high ground a few rods from their camp before they were overtaken by the stream. Two of them, a man and a woman, were drowned, and a third escaped with his life by accident. More than twenty head of cattle that were feeding along the bed of the creek were drowned by the onrushing torrent and their bodies carried several miles downstream. One steer that would dress about 800 lbs. was carried clear down onto Enos Stookey's farm and rolled out on the field, where a few hours before, the men were busy hauling hay. At this point the stream was about 40 rods wide and two or three feet deep, completely destroying the hay and grain crops, carrying away fences and farm machinery and washing off the soil plow deep on the fallow land. Farther down the creek, it spread out more and consequently did less damage."

Luke Johnson, son of Luke S. Johnson, described the flood from his personal recollection this way:

"On July 23, 1878, my sister Phebe and I were at home. We saw a cloud from the south and another from the west. We stood at the end of our house and watched them meet at the top of the pass. It appears that the rain just fell. It was the biggest flood we ever had. . . The next morning, just after my sister Phebe and I had got up, an Indian came around and he told me what had happened, that Indians had been drowned "and lots of Mormon cattle.". . He thought there were three Indians drowned, but one, a cripple with one useless leg, got out some way. By the time we got up there, the creek was 'alive with Indians.' They found one body. The other lodged in the water

ditch. Enos Stookey found him. One foot was out, the rest of him was covered with mud. Enos Stookey sent word and the Indians came and got him. The Indians were buried under a ledge, but later their bones were dug out. There are still some little ornaments there."

At the time "Uncle Luke" recounted this incident in the summer of 1946, he said that he and Henry Charles and Walter Stookey were probably the only ones alive who could remember the flood. All three of them have since died.

Luke Johnson was one of the "boys of '61." In 1861, eight boys were born in Shambip. Their names were: Hyrum Russell, Alfred De St. Jeor, William Caldwell, Douglas Todd, Griffith Davis, Robert Miller, Alonzo J. Stookey, and Luke Johnson.

MORE SOLDIERS INTO UTAH

In September of 1862, General Patrick Edward Connor arrived in Utah, his command of some 750 California volunteers following about a month later and going to Fort Crittenden (formerly Camp Floyd, just south of the present site of Fairfield.) These soldiers had volunteered for service in the Civil War, but General Connor had been sent to Utah with them instead, since some government officials suspected that a majority of the people of the territory were disloyal to the United States and might break out in open revolt at any time. But upon arriving in Utah, Connor found no disloyalty nor indication of revolt among the citizens. "A tame and superfluous task had been assigned to a man of restless energy who had hoped to see action in the Civil War.

"Connor was also ambitious and seeing that the Mormons were greatly in majority in the territory and that they controlled the elections, he contrived to break this church control by bringing non-Mormons into the territory. His means to this end was a mining boom. Brigham Young had constantly warned the people to stick to agricultural resources and that at a later time, then the way would be opened up for mining. We can see how important this was at the time, for the people were entirely dependent upon the land for food, for all their necessities of life; Connor granted his soldiers long furloughs and encouraged them to seek for precious metals in the mountains of Utah."

It was during this period of time that he, along with a group of his men, was out in the Stansbury mountains, probably on a prospecting expedition. In fact, there is at the present time an excavation near the head of Clover Creek which is known as the "Soldier Hole," which was dug by these soldier prospectors. In spite of his opposition to Mormonism, he had somehow heard of the Green family in Clover and that they had come from the east and he invited them up to his camp at the head of the creek for dinner. Hannah Green (who later married Richard N. Bush) was just a little girl at that time, but many years afterward she could still remember how good the dinner tasted to her, after the meager pioneer fare that they were accustomed to.

"It was about this time (1863) too, that Connor, with some of his troops, reoccupied the old Rush Valley grazing grounds, which the soldiers at Camp Floyd had used. There they laid off the town of Stockton, and proceeded to explore and prospect for mines in that vicinity." (Material on General Connor from Whitney's History of Utah)

BURNED AREA EMERGENCY RESPONSE PLAN AMENDMENT

2013 PATCH CREEK FIRE

AGENCY/UNIT: **Bureau of Indian Affairs**
Skull Valley Goshute Tribe
Uintah & Ouray Agency

LOCATION: **Skull Valley, Utah**

DATE: **August 27, 2013**

PREPARED BY: **BIA Burned Area Emergency Response Team (Martinez)**

Submitted By: _____
Fred von Bonin, BAER Team Leader, BIA SWRO

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BURNED AREA EMERGENCY RESPONSE PLAN AMENDMENT

2013 PATCH SPRINGS FIRE

REVIEW AND APPROVAL -- BUREAU OF INDIAN AFFAIRS

I. EMERGENCY STABLIZATION PLAN APPROVAL

☐ **Approve**

☐ **Approve with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Johnna Blackhair, Superintendent, Uintah & Ouray Agency, BIA **Date**

I. EMERGENCY STABLIZATION PLAN CONCURRANCE

☐ **Concur**

☐ **Concur with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Bryan Bowker, Regional Director, Western Region, BIA **Date**

II. EMERGENCY STABILIZATION PLAN CONCURRANCE

☐ **Concur**

☐ **Concur with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Lyle Carlile, Director, Branch of Wildland Fire Management, BIA **Date**

BURNED AREA EMERGENCY RESPONSE PLAN

2013 PATCH SPRINGS FIRE

TABLE OF CONTENTS

BURNED AREA EMERGENCY RESPONSE PLAN AMENDMENT

2013 PATCH SPRINGS FIRE

PART A FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	PATCH SPRINGS	**Date Controlled**	UNKNOWN
Fire Number	HU2S	**Jurisdiction**	**Acres**
Agency Unit	UT-FTA-000075	**BIA**	2,070
Region	Western		
State	Utah		
County	Tooele		
Ignition Date/Manner	August 10, 2013 /Lightning Caused		
Zone	Northern Utah		
Date Contained	August 25, 2013	**TOTAL ACRES**	**2,070**

PART B NATURE OF PLAN

I. Type of Plan (check one box below)

√	**Short-term Emergency Stabilization Plan**
	Long-term Rehabilitation
	Both Long and Short-term Rehabilitation

II. Type of Action (Check One box below)

	Initial Submission
√	**Updating Or Revising The Initial Submission**
	Supplying Information For Accomplishment To Date On Work Underway
	Different Phase Of Project Plan
	Final Report (To Comply With The Closure Of The EFR Account)

EMERGENCY STABILIZATION OBJECTIVES

- **Determine Need for and to Prescribe and Implement Emergency Treatments**
- **Minimize Threats to Human Life, Safety, and Property**
- **Promptly Stabilize and Prevent Unacceptable Degradation to Resources**

PART C TEAM ORGANIZATION

BIA BAER TEAM MEMBERS

POSITION	TEAM MEMBER / AFFILIATION
Team Leader	Fred vonBonin, BIA, SWRO
Soil Scientist	William Sims, Soil Scientist
Tribal Resources	Matt Bear, Skull Valley Goshute Tribe
Implementation Leader	Doug Bryce, Uintah & Ouray Agency

CONSULTATIONS & RESOURCE ADVISORS:

Name	Affiliation	Specialty
Lori Bear	Skull Valley Goshute Tribe	Chairwoman
Christine Bear	Skull Valley Goshute Tribe	Vice Chair
Johnna Blackhair	BIA, U&O Agency	Superintendent
Bucky Whitehouse	Tooele County	Division of Emergency Services
Anthony Beals	NRCS	EWPP Coordinator
Darryl Martinez	BIA, NIFC	BI-Regional BAER Coordinator

PART D TREATMENT COSTS

PATCH SPRINGS FIRE

AGENCY	TREATMENT	TOTAL
BIA	**EMERGENCY STABILIZATION (ES)**	
1	Project Administration Amendment	$3,930
2	Low Water Crossing	$560
3	Rolling Dips	$760
4	K-Rail & Sandbags	$34,078
5	Earthen Berm Installation	8,725
6	Storm Patrol Amendment	$4,500
7	Culvert Removal and Replacement	$10,602
8	Sediment Basins Cleaning/Removal	$28,360
BIA TOTAL		**$91,515**

PART E SUMMARY OF ACTIVITIES

EMERGENCY STABILIZATION (ES) SPECIFICATION
COST SUMMARY TABLE – BUREAU OF INDIAN AFFAIRS

TREATMENT SPECIFICATION	NFPORS CAT.	UNIT	UNIT COST	# OF UNITS	Fiscal Year		SPECIFICATION TOTAL
					2013	2014	
Uintah & Ouray Agency							
Project Administration Amendment	Administration	Report	$1,965	2	$1,965	$1,965	$3,930
Low Water Crossing	Roads	Each	$560	1	$560		$560
Rolling Dips	Roads	Each	$380	2	$760		$760
K-Rails & Sandbags	Facilities and Infrastructure	Each	$240	142	$34,078		$34,078
Earthen Berm Installation	Facilities and Infrastructure	Each	$4,362	2	$8,725		$8,725
Storm Patrol Amendment	Roads	Each	$1,500	3	$4,500		$4,500
Culvert Removal and Replacement	Roads	Each	$5,301	2	$10,602		$10,602
Sediment Basins Cleaning/Removal	Facilities and Infrastructure	Each	$9,453	3	$28,360		$28,360
TOTAL					$89,550	$1,965	**$91,515**

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Project Administrator Amendment	**PART E Spec-#**	1
NFPORS TREATMENT CATEGORY*	Administration	**FISCAL YEAR(S) (list each year):**	2013, 2014
NFPORS TREATMENT TYPE *	Contract Administration and Contract Preparation	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Fund a project leader to coordinate and oversee the implementation of the Patch Springs Burned Area Emergency Response (BAER) Plan for the Uintah & Ouray Agency. This specification provides for funding for an additional total of 1 payperiod in FY2013 and 1 payperiod in FY2014 to implement the BAER Plan for the Uintah & Ouray Agency.

B. Location/(Suitable) Sites: Treatment areas are distributed throughout the fire and will need to be appropriately administered.

C. Design/Construction Specifications: The project leader is responsible for the oversight of the BAER Plan. The leader will implement each treatment to achieve efficient use of funds, personnel, equipment, and contracts. The leader will oversee monitoring, program review, proposed plan revisions, supplemental funding requests and will complete annual and final accomplishment reports in accordance to BIA BAER Policy and Guidelines. The leader will monitor work to ensure compliance with all relevant Federal laws and regulations, which include but are not limited to NEPA and NHPA mitigation requirements and all OSHA regulations and safety standards. The leader will manage the BAER Plan budget and track expenditures by specification and coordinate projects to ensure events occur in their proper order.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to provide quality control and accountability over project implementation.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: The Implementation Leader will conduct review of projects, financial accountability, and oversight and provide written and electronic monitoring reports as prescribed within DOI policy and the BAER plan.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
GS-11 Step 5 @ $31.17 x 35% EBC = $42.08/hr x 40 hrs (.5 PP) = $1,683 for FY2012	$1,683
GS-11 Step 5 @ $31.17 x 35% EBC = $42.08hr x 40 hrs (.5 PP) = $1,683 for FY2013	$1,683
TOTAL PERSONNEL SERVICE COST	$3,366
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Vehicle gasoline @ $3.75/gallon x 75 gallons for FY2013 = $282	$282
Vehicle gasoline @ $3.75/gallon x 75 gallons for FY2014 = $282	$282
TOTAL MATERIALS AND SUPPLY COST	$564
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	

TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2013	9/1/2013	09/30/2013	BIA	Project	$1,965	1	$1,965
2014	10/1/2013	9/30/2014	BIA	Project	$1,965	1	$1,965
						TOTAL	**$3,930**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P, E
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Low Water Crossing	**PART E Spec-#**	2
NFPORS TREATMENT CATEGORY*	Roads	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Prism	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Remove the portion of the road blocking a streambed between the community and the graveyard and replace with a low water crossing to facilitate the flow of water down the channel.

B. Location/(Suitable) Sites: See Site Protections Location map for locations of rolling dip construction**.**

C. Design/Construction Specifications: Using a dozer, remove material from the road and slope each side down to the stream bottom. Armor drainage bottom with 6 inches of gravel.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose maintain the flow of the streambed and to prevent flow from escaping the channel to threaten the graveyard nearby.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: Monitor storm events to ensure that no runoff from upstream is running down road.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
1 Bulldozer @ $100/hr X 2 hr X 1 yr=	$200
45 miles X 2 trips (one in and one out) X $4/mi X 1 project=	$360
TOTAL CONTRACT COST	**$560**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST

	(M/D/YYYY)						
2013	9/12/2013	09/15/2013	S	Project	$560	1	$560
						TOTAL	**$560**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	C
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Point Protection Location map for specific location of the treatment.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Rolling Dip Construction	**PART E Spec-#**	3
NFPORS TREATMENT CATEGORY*	Roads	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Prism	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Construct rolling dips in two places to facilitate that excess water running down the roads will be moved back in to adjacent defined channels.

B. Location/(Suitable) Sites: See Site Protections Location map for locations of rolling dip construction**.**

C. Design/Construction Specifications: Using a dozer, create a rolling dip by excavating and area at least ten feet long to a depth of at least 2 feet and no more than 4 feet where lowest point in trough is angled from the side of the road away from the stream channel towards the side with the stream channel.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to move water off roadways and back into drainages to prevent water moving into the community.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: Monitor storm events to ensure that no runoff from upstream is running down road.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
TOTAL PERSONNEL SERVICE COST	$
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	$
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
1 Bulldozer @ $100/hr X 4 hours X 1yr=	$400
45 miles X 2 trips (one in and one out) X $4/mi X 1 project=	$360
TOTAL CONTRACT COST	**$760**

SPECIFICATION COST SUMMARY

FISCAL	PLANNED	PLANNED COMPLETION	WORK	UNITS	UNIT	PLANNED	PLANNED

YEAR	INITIATION DATE (M/D/YYYY)	DATE (M/D/YYYY)	AGENT		COST	ACCOMPLISHMENTS	COST
2013	9/12/2013	09/15/2013	S	Project	$380	2	$760
						TOTAL	**$760**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	C
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Point Protection Location map for specific location of the treatment.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	K-Rails and Sandbags	**PART E Spec-#**	4
NFPORS TREATMENT CATEGORY*	Facilities and Infrastructure	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Place K-Rails and Sandbags in three areas (Stream Split, North Diversion and Residential) to divert flood waters and debris flows.

B. Location/(Suitable) Sites: See Site Protections Location map for locations of rolling dip construction**.**

C. Design/Construction Specifications:

1. Stream Split Area
    a. K-Rails should be placed end to end on level ground at location specified on map.
    b. K-Rails should be inter-pinned with 30” length of 8 gage rebar or similar metal bar
    c. Place sandbags 3 high on both sides of K-Rail (approximately 1500 sandbags).
    d. An archeologist will be on hand to monitor activities.
2. North Diversion Area
    a. Using fill material, build up low areas where K-Rails are to be placed so that line is level or slightly sloped towards the north
    b. K-Rails should be placed end to end on level ground at location specified on map.
    c. K-Rail should be inter-pinned with 30” length of 8 gage rebar or similar metal bar.
    d. Place fill on downhill side of K-Raid for the entire length completely to the top of the K-Rail and sloped back at a 45 degree angle.
    e. An archaeologist will be on hand to monitor activities.
3. Residential Area
    a. K-Rails should be placed end to end on level ground at location specified on map.
    b. Provide gap at driveway, but interconnect with raised berm behind culvert.
    c. K-Rails should be inter- pinned with 30” length of 8 gage metal or similar metal bar.
    d. Place sandbags 3 high on uphill side of K-Rails (approximately 730 sandbags).
    e. An archaeologist will be on hand to monitor activities.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to protect structures from flooding, debris and mud flows in the event the stream channels overflow their banks.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: Inspect sandbags and K-Rail placement and performance after major storm events and make necessary adjustments to improve protection of structures.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
Type II Fire Crew @ $2500/Day X 5 days	$12,500
Per Diem @ $750/day X 5 Days	$3,750
Archaeologist @ $428.50/Day X 5 Days	$2,143
Per Diem @ $159/Day X 5 Days	$795
TOTAL PERSONNEL SERVICE COST	$19,188
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
K-Rails @ $60 Each X 142	$8,520
Transport to site: $220 per load X 16 loads (9 K-Rail per load)	$3,520
#8 Gage Rebar 426 feet @ $1.88/foot	$800
Portable Toilets @ $200/ week X 3 weeks	$600
TOTAL MATERIALS AND SUPPLY COST	$13,440
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
1 Forklift @ $250/day X 5 days X 1 yr=	$1,250
Move in Cost @ $100 each way X 2=	$200
TOTAL CONTRACT COST	**$1,450**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2013	9/12/2013	09/20/2013	S	Each	$230	142	$14,290
2013	9/12/13	9/20/13	F	Each	$8.78	2230	$19,788
						TOTAL	**$34,078**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	C
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Point Protection Location map for specific location of the treatment.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Earthen Berm Installation	**PART E BIA Spec-#**	5
NFPORS TREATMENT CATEGORY*	Facility and Infrastructure	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley Goshute Tribe	**IMPACTED T&E SPECIES**	N

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description:
Construct earthen berms near structures to divert flood and debris flows.

B. Location/(Suitable) Sites:
See Watershed Treatment Map

C. Design/Construction Specifications:

1. a. Construct two earthen berms 3 ft. high and 3 ft. wide at the locations indicated on Watershed Treatment Map

b. Use existing sediment or fill to construct berms.
c. If needed use sediment from middle pond as barrow material.

2. Inspect berms after large storm events and reshape/repair as needed, estimated

D. Purpose of Treatment Specifications (relate to damage/change caused by fire):
To protect structures from flooding, debris and mud flows in the event stream channels overflow their banks.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust Resources is consistent with BIA Mission

F. Treatment Effectiveness Monitoring Proposed:
Inspect earthen berms after major storm events and make necessary adjustments to improve protection of structures.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
WG-10 Equipment Operators: @ $208/day x 5 days x 2 =	$ 2,080
	$
TOTAL PERSONNEL SERVICE COST	**$2,080**
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Backhoe @ $389/day x 5 days =	$1,945
Skid-Steer @ $205/day x 5 days =	$1,025
Dump truck 5 yds @$765/week x 1 week =	$765
Move in/out @$600/day x 2=	$1,200
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	**$4,935**
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
GSA Vehicle @ $200/week x 1 weeks =	$200
Two personnel @ $151/day x 5 x 1 FY =	$1,510
TOTAL TRAVEL COST	**$1,710**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	**$0**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2013	9/16/2013	9/30/2013	F, S	sites	$4,563	2	$8,725
						TOTAL	**$8,725**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P,T
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Spring BAER Amendment and Watershed Treatment Map

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Storm Patrol & Road Clearing Amendment	**PART E Spec-#**	6
NFPORS TREATMENT CATEGORY*	Roads	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Hazard Removal	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley, UT	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Patrol roads and clear material from road resulting from post storm flooding and debris flows.

B. Location/(Suitable) Sites: Community access roads below Patch Creek Fire affected by flood and/or debris flow.

C. Design/Construction Specifications: After moderate to heavy storms, patrol community roads. If the road is blocked or affected by debris, clear with heavy equipment.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire):

The storm patrol is intended to identify and mitigate issues immediately after a rainfall event to avoid further damage during subsequent events. The purpose of the monitoring is to evaluate the condition of roads for motorized access and to identify and implement additional work needed to maintain and/or repair damage to road.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Although not referenced in a specific approved land management plan, treatment is consistent with the federal government's trust responsibility to tribes.

F. Treatment Effectiveness Monitoring Proposed: The storm patrol will verify that the infrastructure is ready for the next rain event. Storm patrollers can also recommend changes to, or additional treatments, in the first year after the fire.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
Road Clear/Clean @ 1,500//Clearing X 3 Events X FY13	$4,500
TOTAL CONTRACT COST	**$4,500**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (MM/DD/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2013	9/1/13	9/30/13	S	Repair	$1,500	3	$4,500
						TOTAL	**$4,500**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	C
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Culvert Removal and Replacement	**PART E BIA Spec-#**	7
NFPORS TREATMENT CATEGORY*	Roads	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Culverts	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley Goshute Tribe	**IMPACTED T&E SPECIES**	N

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Remove culverts that are undersized for anticipated higher streamflows as a result of the fire. Replace undersized culverts with culverts capable of conveying anticipated post-fire flows.

B. Location/(Suitable) Sites: See Watershed Treatment Map

C. Design/Construction Specifications:

1. Identify and prioritize culverts for replacement: (see Watershed Treatment Map)
2. Develop culvert replacement design and specifications.
3. Install culverts.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): Replacing undersized culverts with higher capacity culverts will minimize damage associated with culvert failure as a result of debris jams, undermining, and over topping.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust Resources is consistent with BIA Mission

F. Treatment Effectiveness Monitoring Proposed: Visually inspect replaced culverts and determine if culvert size is adequate to convey anticipated post fire streamflows.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
WG-10 Equipment Operators: @ $208/day x 5 days x 2 = $2,080.00	$2,080
GS-11/5 Engineer @ $31.17/hr x 35% EBC = $42.08 x 10 hrs/day X 5 days=	$2,104
TOTAL PERSONNEL SERVICE COST	**$4,184**
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Backhoe @ $389/day x 5 days	$1,945
Dump truck 5 yd @ $765/week x 1 week	$765
Move in/out @ $400/day x 2 days	$800
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	**$3,510**
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Galvanized 36" culverts @ $50/ft with aprons x 20 feet =	$1,000
Galvanized 18" culverts @ $25/ft with aprons x 20 feet =	500
TOTAL MATERIALS AND SUPPLY COST	**$1,500**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
Two personnel @ $151/day x 4 x 1 FY = $1208.00	$1,208
GSA Vehicle @ $200/week x 1 weeks = $200	$200
TOTAL TRAVEL COST	**$1,408**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLI SHMENTS	PLANNED COST
2013	9/1/2013	9/30/2013	S, F	Culverts	$5,301	2	$10,602
						TOTAL	**$10,602**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E,M
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P,T
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Spring BAER Amendment and Watershed Treatment Map.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Sediment Basins Cleaning/Removal	**PART E BIA Spec-#**	8
NFPORS TREATMENT CATEGORY*	Erosion/Sedimentation	**FISCAL YEAR(S) (list each year):**	2013
NFPORS TREATMENT TYPE *	Catchment Basin Clean Out	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley Goshute Tribe	**IMPACTED T&E SPECIES**	N

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description:
Remove debris and fill from sediment basins to maximize storage capacity in middle pond. Remove lower pond.
B. Location/(Suitable) Sites:
See Watershed Treatment Map.
C. Design/Construction Specifications:
Middle Pond: Use dozer, backhoe and dump truck to remove mud and debris. Mud should be loaded into dump truck and deposited outside the floodplain where it cannot re-enter stream channels or transported to an approved disposal site. Clean out outlet pipe.
Lower Pond : De-water pond with pump, use dozer to push embankment back into pond area and reshape drainage to conform to natural grade.
Gravel pit pond: Use vacuum truck to remove mud, transport mud material outside of flood plain to a specified location determined by tribe.
D. Purpose of Treatment Specifications (relate to damage/change caused by fire): To maximize basin capacity for subsequent high runoff events and removal lower pond to eliminate flooding threat to adjacent structures. All three ponds recently experienced flooding and mud flows from the Patch Spring fire.
E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust Resources is consistent with BIA Mission
F. Treatment Effectiveness Monitoring Proposed: Inspect middle pond after major runoff events to determine need.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
WG-10 Equipment Operators: @ $208/day x 10 days x 3 =	$6,240
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Backhoe @ $389/day x 7 days =	$2,723
Vacuum trailer/truck@$600/day x 7days=	$4,200
Dump truck 5 yd @$765/week x 2 weeks =	$1,530
D-6 dozer @ $1056/day x 7days =	$7,392
4" trash pump@$75/day x 3days=	$225
Move in/out @$560/day x 2days=	$1,120
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	**$17,190**
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
GSA Vehicle @ $200/week x 2 weeks =	$400
Three personnel @ $151/day x 10 x 1 FY =	$4,530
TOTAL TRAVEL COST	**$4,930**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2013	9/16/2013	09/30/2013	F-S	Basins	$9,453	3	$28,360
						TOTAL	**$28,360**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P,T
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Spring BAER Amendment and Watershed Treatment Map.

APPENDIX I **RESOURCE ASSESSMENT**

BURNED AREA EMERGENCY STABILIZATIN AND REHABILITATION PLAN

PATCH SPRINGS FIRE

HYDROLOGIC RESOURCE ASSESSMENT

I. OBJECTIVES

Hydrology

- Assess overall changes to soil and watershed function caused by the fire, particularly those that pose substantial threats to human life and property, and critical natural and cultural resources and watershed response to precipitation events.
- Identify potential threats to life, property, and critical natural and cultural resources in relation to flooding, erosion, and sediment deposition.
- Develop treatment recommendations.

II. ISSUES

Hydrology

- Increased runoff, erosion and sediment delivery associated after fire has occurred from three events within a week in the Indian Hickman and Dry drainages within the area of the Patch Springs fire.

- There are traditional cultural uses (plant collection and hunting) by members of the Skull Valley Goshute Tribe in these canyons related to existing roads and trails that may be located in the drainage bottoms. These trails and roads are be threatened by recent and new potential flooding and access may be impeded by fallen trees, rocks and other debris. These access routes should be signed to explain the potential hazards related to the burned area including falling/or fallen trees, damage to trail or road surface, and the increased risk for flash flooding.

- Potential threats to residential structures on the Skull Valley Indian Reservation may be likely in spite of the distance of these sites from the canyons, the elevation differences between stream channels and developments.

- An existing water diversion and water delivery system located in Indian Hickman Canyon has been destroyed within the Skull Valley Indian Reservation from two recent flooding events.

III. OBSERVATIONS

Background – The Patch Springs Fire burned within the Stansbury Management Area, Salt Lake Ranger District, Uinta-Wasatch-Cache National Forest. On September 3-4, there was an intense rainstorm occurred over the Indian Hickman and Dry drainages.

Researching NOAA records determined that between 1-2 inches feel in that 2-day period. From that event, mud and debris exploded out of Indian Hickman canyon taking out the irrigation water intake. The mud then split into numerous fingers, at times following existing drainages and at others, creating new ones. Mud from several fingers made it into the community and was deposited on roads, in yards, in gardens and around homes. The NRCS State Hydraulic Engineer estimated the peak flow from this event at 3,000 cubic feet per second. Two subsequent rain events caused water to flow through these new channels and into the community.

A. **Reconnaissance Methodology and Results**

Reconnaissance of the impacts from the mud flow event on September 7-8 involved walking each channel from where Indian Hickman canyon comes onto the Skull Valley Reservation to where they intersect with the highway west of the community. The amount of material deposited, the topography and potential values at risk were noted.

On September 11, a conference was held with NRCS, Tooele County Emergency management and the Goshute Tribe at the Skull Valley Reservation to coordinate each agency's efforts.

B. **Findings –** The September 3-4 rain event overwhelmed the existing shallow channels and as is expected in alluvial systems, the flow split into multiple channels downstream from the mouth of the canyon. The mud in this flow was of a thick consistency, similar to a lahar and in areas seemed to defy physics.

One central channel overwhelmed an existing stream channel and spilled onto the adjacent road travelled toward the community, split again and then travelled into the community burying a garden, depositing material into several yards and up to the base of several homes. The same finger that buried the garden continued to hit a road crossing from which the material was diverted onto the ground south of the channel where it flowed towards one of the reservation graveyards. The material stopped though about 100 feet short of the graveyard.

From the two subsequent rain events, water entered the town primarily down the road and entered residents yards and a garden.

Watershed Response – The watershed response is expected to be high though the fire was mapped as predominantly low severity in the lower portions of the drainages, with areas of moderate severity extending up the north facing slopes of the tributary drainages, with pockets of high in the upper watershed. The National Resources Conservation Service states that high watershed responses connected with low and moderate fire severity re normal for this part of Utah.

Continued sediment-laden runoff will likely occur periodically for the first year following the fire or until vegetation recovers and begins to filter hill slope runoff again. After this

period, runoff should start to decline and return towards background levels. Temporary increases in spring flow may occur due to the reduction in interception and evapotranspiration where vegetation was burned adjacent to springs.

Natural recovery of annual grasses and other vegetation, as well as long-term reestablishment of the shrub component is expected to reduce this value to starting within 1 to 2 years following the fire.

Cheatgrass is a major variable. Multiple past fire scars were noticed along the west face of the Stansbury range. Many showed a preponderance of cheatgrass now dominating the fire area. Cheatgrass sprouts earlier than native vegetation and consumes available water before native vegetation has a chance, precluding natives from becoming established. It then alters the fire regime because of its propensity to readily burn, further excluding native vegetation. Should cheatgrass become established in Indian Hickman canyon, floods and debris flows may become common.

Collaborative Efforts – Based on the meeting of September 11, NRCS will concentrate on the head gate and the irrigation system. They will use the County as the Sponsor and combine the necessary work on the head gate and irrigation system with aerial and ground seeding that the State is planning in the fire area to cover the 25/75 funding split so that the Tribe does not have to put any money forward. The BIA will continue with their proposed treatments. The County will provide sand bags and sand.

The state has cleaned the three culverts along the highway north of the entrance to the community. However, south of the southernmost of the three culverts, the ditch slope is backwards resulting in mud overflowing the entrance road after the third rain event.

IV. RECOMMENDATIONS (Amended)

A. Fire Suppression Rehabilitation

Regrade road going up to Dry Canyon due to rutting damage caused by suppression vehicles.

B. Emergency Stabilization (Amended):

1. **Low Water Crossing –** It is recommended that the section of road closing off the stream channel along the south side of the community be removed and that a low water crossing be installed to allow both water flow and vehicle traffic.

2. **Rolling Dips –** It is recommended that at two sites, one on the road above the pumphouse and the second south of Steven Bear's property, two rolling dips be constructed to move any water on the roads back into the adjacent drainages.

3. **K-Rails & Sandbags –** Place K-Rails in three places three areas to (1) divert water into a drainage running to the north of the community; (2) keep water in a drainage running to the south of the community; and (3) to protect a residence from possible flows down a road coming into the community from the east. Approximately 2,200 sandbags will be used to support the all three K-Rail sections and earth will be piled against the section diverting water to the north.

4. **Earthen Berm Installation –** It is recommended that earthen berms be constructed in two areas (2) adjacent to a residence to the south of the K-Rail installation and (2) to the east of pumphouse along the north side of the road. The earthen berms are to aid in keeping water away from the pumphouse and away from the residence.

5. **Culvert Removal & Replacement –** It is recommended that the ttwo culverts be removed and replaced with large culverts: (1) one in the driveway at a residence; and (2) one in the "gravel pit" south of the residence. One of the culverts is currently nonfunctional and one is partially blocked. Both culverts will be upsized.

6. **Sediment Basins Cleaning and Removal –** It is recommended that the middle and lower ponds on the northeast side of the community be cleaned of mud and debris resulting from the debris flow and that the lower pond be completely removed. It is recommended that the "gravel pit" be excavated to remove the threat of the road being washed out, overwhelming the drainage and threatening the graveyard. The outlet culvert in the middle of the pond will be cleaned out.

C. Rehabilitation

There are no recommendations for emergency rehabilitation.

D. Management Recommendations (non-specification related)

There are numerous scars on the hillsides from fires within the past decade. In many of these areas, cheatgrass is preventing native species from returning and thus shifting the fire frequency to a more frequent regime. As a result, it is probable fire occurrence in the Indian Hickman and Dry Canyon drainages will increase causing flood events similar or even worse than the event that deposited soil and debris in the community this past week. It is recommended that the Army Corps of Engineers be contacted to conduct a study to develop a plan to move water from Indian Hickman Canyon into a main channel that travels south of the community in order to prevent flooding in the community.

V. CONSULTATIONS

Matt Bear, Skull Valley Goshute Tribal Member
Lori Bear, Skull Valley Goshute Tribal Chairwoman
Anthony D. Beals, NRCS Resource Conservationist
Nathaniel Todea, State Hydraulic Engineer, NRCS

Bucky Whitehouse, Tooele County Division of Emergency Services
Darryl Martinez, BIA TriRegional BAER Coordinator

VI. REFERENCES

Fred von Bonin, BAER Lead, BIA Southwest Regional Office
William Sims, BAER Soil Scientist, BIA (Retired)

BURNED AREA EMERGENCY RESPONSE PLAN

2013 PATCH SPRINGS FIRE

APPENDIX II ENVIRONMENTAL COMPLIANCE

BURNED AREA EMERGENCY RESPONSE PLAN

PATCH SPRINGS FIRE

A. FEDERAL ENVIRONMENTAL COMPLIANCE RESPONSIBILITIES

All projects proposed in the 2013 Patch Springs Burned Area Emergency Response (BAER) Plan that are prescribed, funded, or implemented by Federal agencies on the Skull Valley Goshute Reservation are subject to compliance with the *National Environmental Policy Act* (NEPA) in accordance with the guidelines provided by the *Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)*. This Appendix documents the Bureau of Indian Affairs (BIA) BAER Team considerations of NEPA compliance requirements for prescribed emergency stabilization and monitoring actions described in this plan for 2,070 tribal trust acres affected by the Patch Springs Fire on the Skull Valley Goshute Reservation. For any proposed activities not addressed in this plan, the BIA must complete separate NEPA analyses and compliance documentation.

This plan has been developed by a BIA BAER Team, with assistance from Uintah & Ouray Agency BIA and Skull Valley Goshute Tribe.

Agency Specific Guidance: This NEPA documentation has been developed in accordance with the following agency specific guidelines.

- **Bureau of Indian Affairs:** Burned area emergency stabilization and monitoring actions proposed on Tribal Trust lands will comply with NEPA compliance guidelines contained in the Indian Affairs Manual (59 IAM Chapter 3) policy, requirements and responsibilities.

B. RELATED PLANS

The Patch Springs Fire BAER Plan was reviewed for consistency with relevant plans and policies related to Skull Valley Goshute trust lands impacted by the fire. Below are brief descriptions of plans referenced in the development of the Patch Springs Fire BAER Plan.

Uintah & Ouray Agency Wildland Fire Management Plan

The purpose of the Wildland Fire Management Plan is to provide guidance to the Uintah & Ouray Agency/Skull Valley Goshute Tribe wildland fire program and outline wildland fire suppression, management-ignited fire use, mechanical treatment of hazardous fuels, and prescribed natural fire use. General BAER guidelines are also discussed in this plan; criteria are provided to guide the formation of a BAER team to address emergency stabilization and rehabilitation issues.

C. CUMULATIVE IMPACTS ANALYSIS

Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action, when added to other past, present, and reasonably foreseeable future actions, both Federal and non-federal. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The emergency stabilization treatments for the areas affected by the Patch Springs Fire, as proposed in the Patch Springs Fire BAER Plan, do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents of the BIA, Uintah & Ouray Agency, Skull Valley Goshute Tribe and the attached categorical exclusion.

No direct or indirect unavoidable adverse impacts to the biological or physical environment would result from the implementation of the Patch Springs Fire BAER Plan. The implementation of BAER and monitoring treatment actions proposed in the plan would not result in any adverse effect on the burned area or areas downstream. Conversely, implementation of the plan would be expected to result in a cumulatively beneficial response based on BAER recovery efforts.

D. APPLICABLE AND RELEVANT CATEGORICAL EXCLUSIONS

The individual actions proposed in this plan are Categorically Excluded from further environmental analysis as provided for in the Department of Interior Manual Part 516 (Part 516 DM). All applicable and relevant Department of Interior and BIA Categorical Exclusions are listed below. Categorical Exclusion decisions were made with consideration given to the results of emergency consultations completed by the BAER Team and documented below.

Applicable Department of the Interior Categorical Exclusions

Part 516 DM 2 Appendix 1.6	Non-destructive data collection, inventory (including field, aerial and satellite surveying and mapping), study, research and monitoring activities.

Applicable Bureau of Indian Affairs Categorical Exclusions

Part 516 DM 10.5 A	Operation, Maintenance, and Replacement of Existing Facilities Examples are normal renovation of buildings, road maintenance and limited rehabilitation of irrigation structures.
Part 516 DM 10.5 H (6)	Forestry Approval of emergency and range rehabilitation plans when limited to environmental stabilization on less than 10,000 acres and not including approval of salvage sales of damaged timber.
Part 516 DM 10.5 L (4)	Roads and Transportation. Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur.
Part 516 DM 10.5 M (1)	Other Data gathering activities such as inventories, soil and range surveys, timber cruising, geological, geophysical, archaeological, paleontological and cadastral surveys.
Part 516 DM 10.5 M (2)	Other Establishment of non-disturbance environmental quality monitoring programs and field monitoring stations including testing services.

E. APPLICABLE LAWS AND EXECUTIVE ORDERS

This section documents consideration given to the requirements of specific environmental laws in the development of the Patch Springs BAER Plan. Specific consultations initiated or completed during development and implementation of this plan are also documented. The following executive orders and legislative acts have been reviewed as they apply to the Patch Springs Fire BAER Plan.

National Historic Preservation Act (NHPA). Certain emergency stabilization treatments may have the potential to affect significant cultural resources and thereby require the federal agency to comply with NHPA and as promulgated under 36 CFR Part 800. To assist the Uintah & Ouray Agency in meeting NHPA compliance, the Regional Archaeologist was notified and informed that a BIA BAER team was preparing a plan to address issues that were identified concerning potential post-fire risks to human life, property and important cultural and natural resources from the Patch Springs Fire. A

cultural resource assessment was conducted and it was determined that there were no proposed BAER treatments that would impact significant cultural resources, thus negating the need for formal consultation under Section 106 of the NHPA.

Executive Order 11988, Floodplain Management. No proposed treatments would occupy or modify floodplains and all proposed treatments are in compliance with this order.

Executive Order 11990, Protection of Wetlands. No proposed treatments would result in long-term impacts to or loss of wetlands and all proposed treatments are in compliance with this order.

Executive Order 12372, Intergovernmental Review. Coordination and consultation is ongoing with affected Tribe, Federal, and local agencies. A copy of the BAER plan will be disseminated to all affected parties.

Executive Order 12892, Federal actions to address Environmental Justice in Minority and Low-Income Populations. All Federal actions must address and identify, as appropriate, disproportionately high and adverse human health or low-income populations, and Indian Tribes in the United States, The BAER Team has determined that the actions proposed in this plan will result in no adverse human health or environmental effects for minority or low-income populations and Indian Tribes.

Endangered Species Act. The BAER Team has consulted with US Fish and Wildlife Service Biologists regarding actions proposed in this plan and potential effects on federally listed species and has determined that there is No Effect on threatened and endangered species.

Clean Water Act. All proposed treatments are in compliance with this Act. Emergency stabilization measures proposed are necessary to maintain clean water within the burn and adjacent areas. Long-term impacts are considered beneficial to water quality.

Clean Air Act. Federal Ambient Air Quality Primary and Secondary Standards are provided by the National Ambient Air Quality Standards, as established by the U.S. Environmental Protection agency (EPA) (Clean Air Act, 42 U.S.C. 7470, et seq., as amended). The BAER Team has determined that treatments prescribed in the Patch Springs BAER Plan will have short-term minor impacts to air quality due to equipment emissions and/or increase in particulates during ground-based activities, but they that would not differ significantly from routine land use practices for the area. As such, all proposed treatments are in compliance with this Act.

F. CONSULTATIONS

The BAER Team Leader met with the Tribal Chairwoman in Tooele, UT on September 9, 2013 to obtain updated information on flooding issues of concern for the Skull Valley Goshute Reservation.

G. STATEMENT OF COMPLIANCE

The CEQ Regulations at 40 CFR 1508.4 require agencies to consider whether fairly routine actions involve extraordinary circumstances that, per NEPA, trigger an agency to prepare additional assessment and consideration. If it is determined that any of the exemptions listed in 516 DM Appendix 2 apply to a proposed action, that action may not be categorically excluded, and an Environmental Assessment or an Environmental Impact Statement must be prepared. All treatments that are proposed as a Categorical Exclusion for the Patch Springs Fire BAER Plan have been compared against the list of extraordinary circumstances and were found not to trigger any exceptions.

I have reviewed the proposed treatments in the Patch Springs Fire BAER Plan in accordance with the criteria discussed above and have determined that the proposed actions qualify as BIA Categorical Exclusions and would not result in any significant effect on the environment. BAER Team specialists have completed necessary coordination and consultation to ensure compliance with the National Historic

Preservation Act, Endangered Species Act and other Federal, State and local environmental review requirements. As such, all treatments are approved for implementation.

Prepared by: Darryl Martinez, Amended Patch Springs Fire, BIA BAER

Approved: _____

Johnna Blackhair, Superintendent, Uintah & Ouray Agency Date

EXCEPTION CHECKLIST FOR BIA CATEGORICAL EXCLUSIONS

Project: Patch Springs Fire Burned Area Emergency Response (BAER) Plan Amendment
Date: 8/28/2013

Nature of Proposed Action: Approval and implementation of prescribed treatments in the Patch Springs Fire BAER Plan Amendment.

Part 516 DM 2 Appendix 1.6 Categorical Exclusions:

Non-destructive data collection, inventory (including field, aerial and satellite surveying and mapping), study, research and monitoring activities.

Part 516 DM 10.5 Categorical Exclusions:

A Operation, Maintenance, and Replacement of Existing Facilities

Examples are normal renovation of buildings, road maintenance and limited rehabilitation of irrigation structures.

H (6) Forestry

Approval of emergency forest and range rehabilitation plans when limited to environmental stabilization on less than 10,000 acres and not including approval of salvage sales of damaged timber.

L (4) Roads and Transportation.

Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur.

M (1) Other

Data gathering activities such as inventories, soil and range surveys, timber cruising, geological, geophysical, archeological, paleontological and cadastral surveys.

M (2) Other

Establishment of non-disturbance environmental quality monitoring programs and field monitoring stations including testing services.

Evaluation of Exception to use of Categorical Exclusion

1.	This action would have significant adverse effects on public health or safety.	No ☒	Yes ☐
2.	This action would have an adverse effect on unique geographical features, such as wetland, wild or scenic rivers, refuges, floodplains, rivers placed on nationwide river inventory, or prime or unique farmlands.	No ☒	Yes ☐
3.	The action will have highly controversial environmental effects.	No ☒	Yes ☐
4.	The action will have highly uncertain environmental effects or involve unique or unknown environmental	No ☒	Yes ☐

risks.

5.	This action will establish a precedent for future actions.	No ☒	Yes ☐
6.	This action is related to other actions with individually insignificant, but cumulatively significant environmental effects.	No ☒	Yes ☐
7.	This action will affect properties listed or eligible for listing in the National Register of Historic Places.	No ☒	Yes ☐
8.	This action will affect a species listed, or proposed to be listed as endangered or threatened.	No ☒	Yes ☐
9.	This action threatens to violate federal, state, local, or tribal law or requirements imposed for protection of the environment.	No ☒	Yes ☐
10.	This action will have a disproportionately high and adverse effect on low income or minority populations.	No ☒	Yes ☐
11.	This action will limit access to, and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners, or significantly adversely affect the physical integrity of such sacred sites.	No ☒	Yes ☐
12.	This action will contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area, or may promote the introduction growth, or expansion of the range of such species.	No ☒	Yes ☐

A “yes” to any of the above exceptions will require that an EA be prepared.

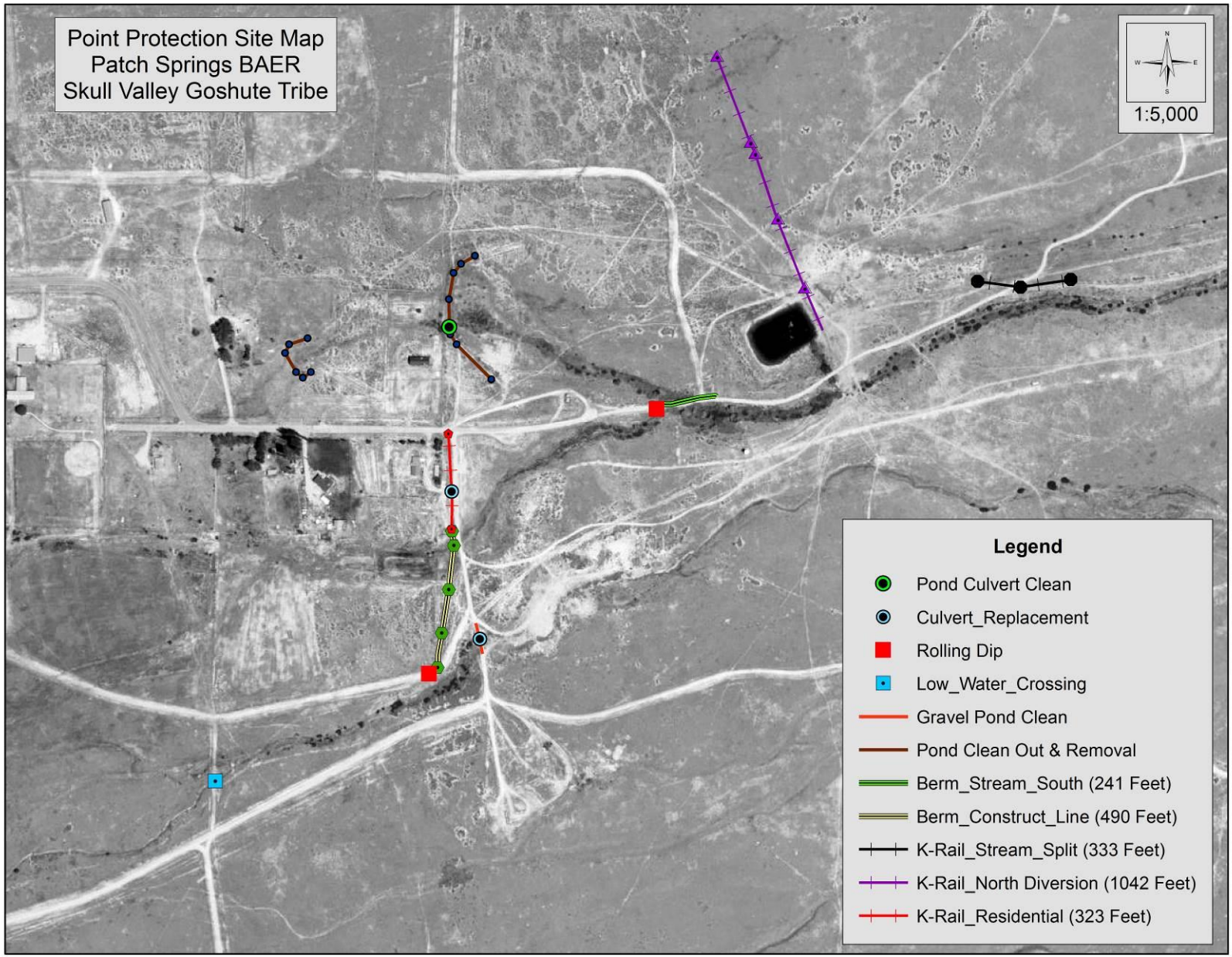
NEPA Action - - - CE **X** EA _____

Preparer’s Name and Title: Darryl Martinez, BIA BAER

Regional Archaeologist Concurrence with Item 7 _____

Concur: _____ Date: _____
Uintah & Ouray Agency Superintendent

APPENDIX IV - MAPS



APPENDIX V : Supporting Documentation - Photos

Debris Flow Above Mouth of Indian Hickman Canyon

Remains of Head Gate

Water level near Head Gate

Mud Flow East of Community

Mud Flow east of Community

Mud around Home

Debris reaching a home

Mud piled up against a home

Mud in a private garden

Mud Flow through vegetable garden

Mud flow down road on south side of community

Mud and Water moving down road

APPENDIX IV – Supporting Documentation

Harper Precast
P.O. Box 18549
Salt Lake City, UT 84116
Phone: (801) 326-1016
Fax: (801) 326-1019

Quote Number: 13-578

Order Date: 9/10/2013

Customer Copy

Bill to:	All Bidders	**Delivery to:**	Skull Valley Goshute Tribe
	,		Dugway, UT 84022
Contact:		**Project Manager:**	Douglas Boyce
Phone :	**Fax:**	**Phone :**	**Fax:**
Customer ID:	ALL	**PO:**	**ShipVia:**
Terms:	NET 30		

Sales Rep: John Newton

Qty	Item	Description	Weight	Unit Price	TX	Extension
Structure:	**Barrier**	**Used Barrier**				
142	MISCINV	12' Used Jersey Barrier	0	$50.00	☐	$7,100.00
		Barrier to be unloaded and set by contractor				
						$7,100.00
Structure:	**Delivery**	**Delivery**				
12	Z04.50F	Zone 04.50 Freight Flat Semi	0	$400.00	☐	$4,800.00
		12 barrier / flat semi. Unit weight approx 4,700 lbs each				
						$4,800.00
		Total Weight	0			

Taxable	$0.00
Non-Taxable	$11,900.00
Sub Total	$11,900.00
Tax	$0.00
Total	$11,900.00

All applicable Federal, State and Local taxes will be added to these prices.

Prices quoted are firm for 60 days and bid must be accepted within 60 days to be considered valid.

Restocking fee of 20% and truck fee to be charged for all returns. Authorization required for all returns

Harper Precast makes no guarantee as to the accuracy and completeness of take-offs or extension errors. Customer to confirm all quanities.

Customer to furnish men and equipment to unload delivery trucks unless otherwise noted.

Trucks remaining on jobsite more than one hour will be charged $90/hr. in fiftteen minute increments.

Terms are Net 10th of the following month of invoice.
All amounts not paid when due shall be subject to a finance charge of 2% per month on the unpaid balance.

Quote Accepted By:

_____

SUNSTATE Equipment Co.

** COPY **
BRANCH LOCATION
SALT LAKE
801-364-4408
AFTER HR#:(801) 232-0597

PLEASE REMIT TO:
P.O. BOX 52581
PHOENIX, AZ 85072-2581

CONTRACT TYPE: QUOTE
INVOICE # 11741341
PO # QUOTE
JOB #
JOB NAME: INDIAN RESERVATION
ORDERED BY: BILL/SM/STEVENM/1865
DATE/TIME OUT: 9/12/13 4:25 PM
DATE/TIME IN: 9/20/13 4:20 PM

CUSTOMER # 116259 PHONE# 435-722-4300

DOI BOI U&O AGENCY BRANCH OF
PO BOX 130
FT DUCHESNE, UT 84026

CONTACT: BILL SIMS 505-228-9850 TERRITORY: 231 PROCESSED BY: STEVENM
DRIVER LICENSE: LICENSE PLATE: RETURN LOC:
JOB ADDRESS: 1265 N ROWLEY RD SKULL VALLEY
DEL. INSTRUCTIONS: WORKING AT THE INDIAN RESERVATION ON THE WAY TO DUGWAY/BILL IS THE CONTACT 505 220 0850

RENTAL RATES ARE FOR EACH ITEM AND DO NOT INCLUDE FUEL OR DELIVERY

ITEM QTY	EQUIPMENT DESCRIPTION EQUIP. #	DAY	RATES WEEK	4 WEEK	EXTENDED PRICE
1	5 YARD DUMP TRUCK - (NON - CDL) <260 0922810 CC: 092-2810	295.00	765.00	2000.00	1060.00
1	TRACK SKIDSTEER LOADER (1,900# BKT) 0855250 CC: 085-5250	330.00	1020.00	2400.00	1350.00
1	BACKHOE 14' 4WD (JD 310) 0876300 CC: 087-6300	315.00	835.00	2100.00	1150.00
1	REACH FORK 42' 6000# 4WD 0561750 CC: 056-1750	350.00	935.00	2000.00	1285.00
1	500 GAL VAC TRAILER W/ 25' HOSE 0912150 CC: 091-2150	375.00	1275.00	4000.00	1650.00

SALES ITEMS:

Qty	Item number	Unit	Price	
1	ENV ENVIRONMENTAL CHARGE	EA	8.000	8.00
	DELIVERY CHARGE DELIVERY BY:			200.00
	PICKUP CHARGE PICKUP BY:			200.00

This contract has custom rates applied.
" GOOD FOR 30 DAYS "
" ESTIMATE PURPOSES ONLY "

SUB TOTAL:	6903.00
DAMAGE WAIVER:	909.30
TAX:	529.08
TOTAL AMOUNT DUE:	8341.38

RENT CONTINUES UNTIL YOU CALL 801-364-4408 TO HAVE EQUIPMENT PICKED UP.

CUSTOMER SIGNATURE	PRINT CUSTOMER'S FULL NAME	DELIVERED BY	DATE

TERMS: NET 10th PROX. (DUE 10th OF THE FOLLOWING MONTH). SERVICE CHARGES AT THE RATE OF 18% PER ANNUM WILL BE CHARGED ON ALL PAST DUE ACCOUNTS.
- CUSTOMER AGREES THAT DAMAGE AND THEFT WAIVER IS VOIDED IF EQUIPMENT IS NOT KEPT IN A LOCKED ENCLOSURE OR PROTECTED BY A SECURITY GUARD WHEN NOT IN USE.
- A SERVICE/CLEANING CHARGE MAY RESULT DUE TO EQUIPMENT BEING RETURNED DAMAGED OR IN NEED OF EXCESSIVE CLEANING.
- THE ENVIRONMENTAL FEE IS NOT REGULATED NOR COLLECTED BY OR FOR ANY GOVERNMENTAL AGENCY.
- WARNING: UNLAWFUL FAILURE TO RETURN RENTED PROPERTY MAY BE A FELONY. FINES, CRIMINAL PROSECUTION, AND/OR IMPRISONMENT COULD RESULT.
- BY SIGNING ABOVE I AGREE TO TERMS ON FRONT AND BACK OF THIS CONTRACT. I ALSO ACKNOWLEDGE RECEIVING INSTRUCTIONS AS TO THE SAFE AND PROPER USE OF THE EQUIPMENT.

Revised 10/28/10

T: 801-596-2668
F: 801-596-2686

HarrisRebar
Salt Lake City Office

1626 S 700 W Bldg A
Salt Lake City, UT 84104

Customer: Bureau of Indian Affairs
Date: 09/12/13

PROJECT: Flood Damage Repair @ Cochute Indian Reservation

Concrete deformed reinforcing steel: ☑ ASTM A615 grade 60 ☐ ASTM A706

☑ Black Bar ☐ Epoxy Coated ☐ Galvanized

Furnish Rebar Below:

Qty	Size	Shape	Leg A (ft)	Leg B (ft)	Leg C (ft)	Leg D (ft)	Leg E (ft)	Leg G (ft)	H (ft)	K (ft)	Weight (lbs)
142	8			3							1137
									Total (lbs)		1137

Subtotal:	$685.00	Tax Exempt
Delivery:	n/a	
Total:	$685.00	Tax Exempt

Will Call ☑ **Delivered** ☐
Location: _____

Notes:

1) Please add $300 for delivery. Approx delivery location: about 12 miles north of Dugway.
2) Please allow 2-3 days to fabricate the bars from notice to proceed.

COD Payments: We accept Visa, MasterCard or Checks. We cannot accept cash payments.

FW: Dozer Rental

Inbox x

William Sims 4:23 PM (16 hours ago)

to me, douglas.bryce

Dozer quote
This is the only one I requested
Bill

From: CameronPreston@honnen.com
To: william_sims@hotmail.com
CC: PatrickWells@honnen.com
Date: Thu, 12 Sep 2013 17:17:45 -0500
Subject: RE: Dozer Rental

Dear Bill,

Below is the information you requested:

- 750K (equiv. to a D6M) = $2,500 p/ week / 834 p/ day = $4,168 p/ 7 days and/or 56 hours of use.

- 850K (equiv. to a D6T) = $3,000 p/ week / $1,000 p/ day = $5,000 p/ 7 days and/or 56 hours of use.

- Transportation to jobsite = $450 each way

Please call me with any questions. Either myself or my sales rep, Pat Wells, whom I've Cc'd on this email, will follow up with you tomorrow.

Kind regards,

Cameron Preston

Utah Senior Sales Manager

Honnen Equipment Co.

4055 S 500 W | Salt Lake City, UT 84123

P: 801-293-2187 | F: 801-261-1857 | C: 801-834-5585

cameronpreston@honnen.com

www.honnen.com

From: William Sims [mailto:william_sims@hotmail.com]
Sent: Thursday, September 12, 2013 12:04 PM
To: Cameron Preston
Subject: Dozer Rental

Cameron

Requesting 7 day rental on D-6 w/ tilt blade plus haul cost to Goshute Indian Reservation 12 miles north of Dugway, Utah
This is for the Bureau of Indian Affairs which is tax exempt

My phone is 505-228-9850

E-mail me the quote

Thanks,
William Sims

US DEPT OF INTERIOR
BUREAU OF INDIAN AFFAIRS
BRANCH OF FIRE MANAGEMENT
NATIONAL INTERAGENCY FIRE CENTER

BURNED AREA EMERGENCY RESPONSE (BAER)

REQUEST TO INITIATE EMERGENCY STABILIZATION FUNDING

1. Date of Request	9/9/2013
2. Agency Name	Uintah & Ouray
3. Agency Contact and Phone number	Doug Bryce 435-724-2592
4. Fire Name	Patch Springs
5. Fire Code	HU2S
6. Project duration (years)	1
7. Request for funds (Dollars) **NOTE: On the next page, list proposed treatments and estimated cost of each**	Emergency Stabilization $ 50,000 For Emergency Implementation work due to recent rain events
8. ES funding Code:	13XA1125TR / AF2202020.000000 / Cost Center / AF.SPHUS20000.00000
9. Total estimated cost of ES Project **NOTE: On the next page, list proposed treatments and estimated cost of each**	Emergency Stabilization $ $75,000
10. Reviewed/Approved By: (Agency Signature)	
11. Reviewed/Approved By: (Regional Office Signature)	
12. Reviewed/Approved By: (NIFC Signature)	Lyle Carlile 9/9/13

APPROVAL LEVELS: Superintendent up to $250,000, Regional Director $250,000 to $500,000, BIA-NIFC over $500,000.

Form Version: 8/2013

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FLOOD ASSESSMENT RESPONSE PLAN

2014 PATCH SPRING ES #2

AGENCY/UNIT: Bureau of Indian Affairs
Skull Valley Goshute Tribe
Uintah & Ouray Agency

LOCATION: Skull Valley, Utah

DATE: September 3, 2014

PREPARED BY: BIA Emergency Response Team (Martinez)

Submitted By: _____

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FLOOD ASSESSMENT RESPONSE PLAN

2014 PATCH SPRING ES #2

REVIEW AND APPROVAL -- BUREAU OF INDIAN AFFAIRS

I. EMERGENCY STABLIZATION PLAN APPROVAL

☐ **Approve**

☐ **Approve with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Lelilah Duncan, Acting Superintendent, Uintah & Ouray Agency, BIA **Date**

I. EMERGENCY STABLIZATION PLAN CONCURRANCE

☐ **Concur**

☐ **Concur with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Bryan Bowker, Regional Director, Western Region, BIA **Date**

II. EMERGENCY STABILIZATION PLAN CONCURRANCE

☐ **Concur**

☐ **Concur with Revision**

☐ **Disapproved**

Explanation for Revision or Disapproval:

Lyle Carlile, Director, Branch of Wildland Fire Management, BIA **Date**

FLOOD ASSESSMENT RESPONSE PLAN

2014 PATCH SPRING ES #2

TABLE OF CONTENTS

FLOOD ASSESSMENT RESPONSE PLAN

2014 PATCH SPRING ES #2

PART A FIRE LOCATION AND BACKGROUND INFORMATION

Incident Name	PATCH SPRINGS ES#2	**Date Controlled**	UNKNOWN
Incident Number	EMQ5	**Jurisdiction**	**Acres**
Agency Unit	UT-UOA-000305	**BIA**	
Region	Western		
State	Utah		
County	Tooele		
Ignition Date/Manner			
Zone	Northern Utah		
Date Contained		**TOTAL ACRES**	

PART B NATURE OF PLAN

I. Type of Plan (check one box below)

√	**Short-term Emergency Stabilization Plan**
	Long-term Rehabilitation
	Both Long and Short-term Rehabilitation

II. Type of Action (Check One box below)

	Initial Submission
√	**Updating Or Revising The Initial Submission**
	Supplying Information For Accomplishment To Date On Work Underway
	Different Phase Of Project Plan
	Final Report (To Comply With The Closure Of The EFR Account)

EMERGENCY STABILIZATION OBJECTIVES

- **Determine Need for and to Prescribe and Implement Emergency Treatments**
- **Minimize Threats to Human Life, Safety, and Property**
- **Promptly Stabilize and Prevent Unacceptable Degradation to Resources**

PART C TEAM ORGANIZATION

BIA BAER TEAM MEMBERS

POSITION	TEAM MEMBER / AFFILIATION
Burned Area Emergency Response Specialist	Rebecca Biglow
Burned Area Emergency Response Specialist	William Sims
Tribal Resources	Matt Bear, Skull Valley Goshute Tribe
Implementation Leader	

CONSULTATIONS & RESOURCE ADVISORS:

Name	Affiliation	Specialty
Lori Bear	Skull Valley Goshute Tribe	Chairwoman
Christine Bear	Skull Valley Goshute Tribe	Vice Chair
Lelilah Duncan	BIA, U&O Agency	Acting Superintendent
Bucky Whitehouse	Tooele County	Division of Emergency Services
Anthony Beals	NRCS	EWPP Coordinator
Darryl Martinez	BIA, NIFC	BIA-Regional BAER Coordinator
Keith Burnette	BIA, Western Region	Western BAER Coordinator

PART D TREATMENT COSTS

PATCH SPRINGS FIRE

AGENCY	TREATMENT	TOTAL
BIA	**EMERGENCY STABILIZATION (ES)**	
1	Project Administration	$7,082
2	Rolling Dips	$1,416
4	K-Rail & Sandbags	$22,760
5	Earthen Berm Installation	$10,217
7	Culvert Removal and Replacement	$9,063
8	Sediment Basin Cleaning	$8,962
BIA TOTAL		**$59,500**

PART E SUMMARY OF ACTIVITIES

EMERGENCY STABILIZATION (ES) SPECIFICATION
COST SUMMARY TABLE – BUREAU OF INDIAN AFFAIRS

TREATMENT SPECIFICATION	NFPORS CAT.	UNIT	UNIT COST	# OF UNITS	Fiscal Year		SPECIFICATION TOTAL
					2014	2015	
Uintah & Ouray Agency							
Project Administration Amendment	Administration	Report	$7,082	1	$7,082		$7,082
Rolling Dips	Roads	Each	$730	2	$1,416		$1,416
K-Rails & Sandbags	Facilities and Infrastructure	Each	$632	36	$22,760		$22,760
Earthen Berm Installation	Facilities and Infrastructure	Each	$3,406	3	$10,217		$10,217
Culvert Removal and Replacement	Roads	Each	$9,063	1	$9,063		$9,063
Sediment Basin Cleaning	Facilities and Infrastructure	Each	$8,962	1	$8,962		$8,962
TOTAL					$59,500		**$59,500**

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Project Administrator Amendment 2	**PART E Spec-#**	1
NFPORS TREATMENT CATEGORY*	Administration	**FISCAL YEAR(S) (list each year):**	2014
NFPORS TREATMENT TYPE *	Contract Administration and Contract Preparation	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Fund a project leader to coordinate and oversee the implementation of the Patch Springs Burned Area Emergency Response (BAER) Plan for the Uintah & Ouray Agency. This specification provides funding for 12 days of oversight to implement the BAER Plan Amendment 2 for the Uintah & Ouray Agency.

B. Location/(Suitable) Sites: Treatment areas are distributed throughout the fire and will need to be appropriately administered.

C. Design/Construction Specifications: The project leader is responsible for the oversight of the amendment of the BAER Plan. The leader will implement each treatment to achieve efficient use of funds, personnel, equipment, and contracts. The leader will oversee monitoring, program review, proposed plan revisions, supplemental funding requests and will complete annual and final accomplishment reports in accordance to BIA BAER Policy and Guidelines. The leader will monitor work to ensure compliance with all relevant Federal laws and regulations, which include but are not limited to NEPA and NHPA mitigation requirements and all OSHA regulations and safety standards. The leader will manage the BAER Plan budget and track expenditures by specification and coordinate projects to ensure events occur in their proper order.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to provide quality control and accountability over project implementation.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: The Implementation Leader will conduct review of projects, financial accountability, and oversight and provide written and electronic monitoring reports as prescribed within DOI policy and the BAER plan.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
AD-K (Burned Area Emergency Response Specialist) $38.04/hr x 120 hrs (12 10hr days) x 1for FY 2014 = $4,565	$4,565
TOTAL PERSONNEL SERVICE COST	$4,565
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Vehicle rental @ $259.99/week and/or $52.99/day x 1. for FY2014 = $525	$282
Vehicle gasoline @ $3.55/gallon x 70 gallons x 7% x 1for FY2014 = $249	$267
TOTAL MATERIALS AND SUPPLY COST	$549
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
12 days x $164 per diem / day x 1 = $1,968	$1,968
TOTAL TRAVEL COST	**$1,968**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2014	9/5/2014	09/30/2013	BIA	Project	$1,965	1	$7,082
						TOTAL	**$7,082**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P, E
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Rolling Dip Construction	**PART E Spec-#**	2
NFPORS TREATMENT CATEGORY*	Roads	**FISCAL YEAR(S) (list each year):**	2014
NFPORS TREATMENT TYPE *	Prism	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Construct rolling dips in one places to facilitate that excess water running down the roads will be moved back in to adjacent defined channels.

B. Location/(Suitable) Sites: See Site Protections Location map for locations of rolling dip construction**.**

C. Design/Construction Specifications: Using a dozer, create a rolling dip by excavating and area at least ten feet long to a depth of at least 2 feet and no more than 4 feet where lowest point in trough is angled from the side of the road away from the stream channel towards the side with the stream channel.

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to move water off roadways and back into drainages to prevent water moving into the community.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: Monitor storm events to ensure that no runoff from upstream is running down road.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
TOTAL PERSONNEL SERVICE COST	$
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	$
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
1 Bulldozer @ the daily rate of $1,056 x 1=	$1,056
45 miles X 2 trips (one in and one out) X $4/mi X 1 project=	$360
AL CONTRACT COST	**$1,416**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2013	9/12/2013	09/15/2013	S	Project	$708	2	$1,416
						TOTAL	**$1,416**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	C
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Springs BAER Amendment Emergency Stabilization Treatment Map, Appendix IV.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	K-Rails and Sandbags	**PART E Spec-#**	3
NFPORS TREATMENT CATEGORY*	Facilities and Infrastructure	**FISCAL YEAR(S) (list each year):**	2014
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	**WUI? Y / N**	Yes
IMPACTED COMMUNITIES AT RISK	Skull Valley	**IMPACTED T&E SPECIES**	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Place K-Rails and Sandbags along North Diversion to divert flood waters and debris flows.

B. Location/(Suitable) Sites: See Site Protections Location map for locations of rolling dip construction**.**

C. Design/Construction Specifications:

1. North Diversion Area

    a. Remove the 28 K-Rails from the Stream-Split area and transport them to the North Diversion area

    b. K-Rails will be placed above existing K-Rails on top of compacted berm directly behind the existing K-Rails

    c. K-Rails should be placed end to end on level ground at specification locations along the North Diversion.

    d. K-Rails should be inter-pinned with 30" length of 8 gage rebar or similar metal bar

    e. Place sandbags along toe of K-Rail (approximately 300 sandbags).

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): The purpose is to protect structures from flooding, debris and mud flows in the event the stream channels overflow their banks.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust resources is consistent with BIA mission.

F. Treatment Effectiveness Monitoring Proposed: Inspect sandbags and K-Rail placement and performance after major storm events and make necessary adjustments to improve protection of structures.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
Type II Fire Crew @ $2500/Day X 6 days x 1=	$15,000
Per Diem @ $750/day X 6 Days x 1=	$4,500
TOTAL PERSONNEL SERVICE COST	$19,500
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
K-Rails @ $60 Each X 8 x 1=	$480
Transport to site: $405 per load X 1 loads (9 K-Rail per load) x 1 =	$405
#8 Gage Rebar x 12ft x $1.88/foot x 1=	$25
Portable Toilets @ $200/ week X 2 week x 1=	$400
Miscellaneous cost	$500
TOTAL MATERIALS AND SUPPLY COST	$1,810
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
1 Forklift @ $250/day X 5 days X 1 yr=	$1,250
Move in Cost @ $100 each way X 2=	$200
TOTAL CONTRACT COST	**$1,450**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
2014	9/5/2014	09/10/2014	S	Each	$91	36	$3,260
2013	9/5/14	9/30/14	F	Each	$325	60	$19,500
						TOTAL	**$22,760**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Springs BAER Amendment Emergency Stabilization Treatment Map, Appendix IV.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Earthen Berm Installation	**PART E BIA Spec-#**	4
NFPORS TREATMENT CATEGORY*	Facility and Infrastructure	**FISCAL YEAR(S) (list each year):**	2014
NFPORS TREATMENT TYPE *	Stabilize/Secure/Protect Structures	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley Goshute Tribe	**IMPACTED T&E SPECIES**	N

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description:
Construct earthen berms near structures to divert flood and debris flows.

B. Location/(Suitable) Sites:
See Watershed Treatment Map

C. Design/Construction Specifications:

1. Construct two earthen berms 3 ft. high and 3 ft. wide at the locations indicated on Watershed Treatment Map

2. Construct one earthen berm 5 ft. high and 10 ft. wide at the location indicated on Watershed Treatment Map

3. Use existing sediment or fill material to construct berms

D. Purpose of Treatment Specifications (relate to damage/change caused by fire):
To protect structures from flooding, debris and mud flows in the event stream channels overflow their banks.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust Resources is consistent with BIA Mission

F. Treatment Effectiveness Monitoring Proposed:
Inspect earthen berms after major storm events and make necessary adjustments to improve protection of structures.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
GS-6 Forestry Tech (Equipment Operators): @ $250/day x 4 days x 3 x 1=	3,000$
TOTAL PERSONNEL SERVICE COST	**$3,000**
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Backhoe @ $389/day x 4 days =	$1,544
Skid-Steer @ $285/day x 4 days =	$1,140
Dump truck 5 yds @$765/week x 1 week =	$765
Move in/out @$600/day x 2=	$1,200
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	**$4,649**
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
TOTAL MATERIALS AND SUPPLY COST	
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
GSA Vehicle @ $200/week x 3 x 1 weeks x 1 =	$600
Per diem $164/day x 3 x 4 x 1=	$1,968
TOTAL TRAVEL COST	**$2,568**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	**$0**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLI SHMENTS	PLANNED COST
2014	9/5/2014	9/30/2014	F, S	sites	$3,406	3	$10,217
						TOTAL	**$10,217**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P,T
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Springs BAER Amendment Emergency Stabilization Treatment Map, Appendix IV.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Culvert Removal and Replacement	**PART E BIA Spec-#**	5
NFPORS TREATMENT CATEGORY*	Roads	**FISCAL YEAR(S) (list each year):**	2014
NFPORS TREATMENT TYPE *	Culverts	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley Goshute Tribe	**IMPACTED T&E SPECIES**	N

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description: Remove culvert that are undersized for anticipated higher streamflows as a result of the fire. Replace undersized culverts with culverts capable of conveying anticipated post-fire flows.

B. Location/(Suitable) Sites: See Watershed Treatment Map

C. Design/Construction Specifications:

1. Place additional 36" culvert within the south pond embankment (see Watershed Treatment Map)

a. Remove old culvert

b. Install and back fill

c. Rock armor fill-slope on inlet and outlet side of culvert

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): Replacing undersized culverts with higher capacity culverts will minimize damage associated with culvert failure as a result of debris jams, undermining, and over topping.

E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust Resources is consistent with BIA Mission

F. Treatment Effectiveness Monitoring Proposed: Visually inspect replaced culverts and determine if culvert size is adequate to convey anticipated post fire streamflows.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
GS-6 Forestry Tech (Equipment Operators): @ $250/day x 3 days x 3 x 1 =	$2,250
TOTAL PERSONNEL SERVICE COST	**$2,250**
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Backhoe @ $389/day x 2 days	$772
Dump truck 5 yd @ $765/week x 1 week	$765
Move in/out @ $400/day x 2 days	$800
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	**$2,337**
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Galvanized 36" culverts @ $50/ft with aprons x 20 feet =	$2,000
Equipment Fuel	$1,000
TOTAL MATERIALS AND SUPPLY COST	**$2,000**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
Per Diem $164 x 3 x 2 x 1=	$984
TOTAL TRAVEL COST	**$984**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	**$9,063**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLI SHMENTS	PLANNED COST
2013	9/1/2013	9/30/2013	S, F	Culverts	$9,063	1	$9,063
						TOTAL	**$9,063**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E,M
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P,T
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Springs BAER Amendment Emergency Stabilization Treatment Map, Appendix IV.

PART F - INDIVIDUAL TREATMENT SPECIFICATION

TREATMENT/ACTIVITY NAME	Sediment Basins Cleaning	**PART E BIA Spec-#**	6
NFPORS TREATMENT CATEGORY*	Erosion/Sedimentation	**FISCAL YEAR(S) (list each year):**	2014
NFPORS TREATMENT TYPE *	Catchment Basin Clean Out	**WUI? Y / N**	Y
IMPACTED COMMUNITIES AT RISK	Skull Valley Goshute Tribe	**IMPACTED T&E SPECIES**	N

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

A. General Description:
Remove debris and sediment from Gravel pit pond (South pond) to maximize storage capacity and improve runoff through culverts.
B. Location/(Suitable) Sites:
See Watershed Treatment Map.
C. Design/Construction Specifications:
Use dozer, backhoe and dump truck to remove sediment and debris

1. Use fill material to strengthen embankment shoulders and top
2. Remove excess fill material from flood plan

D. Purpose of Treatment Specifications (relate to damage/change caused by fire): Gravel pit pond received heavy flows from recent flood and requires maintenance to maximize basin capacity for subsequent high runoff events.
E. Treatment consistent with Agency Land Management Plan (identify which plan): Protection of beneficiaries and Indian Trust Resources is consistent with BIA Mission
F. Treatment Effectiveness Monitoring Proposed: Inspect pond after major runoff events to determine need.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	**COST / ITEM**
GS-6 Forestry Tech (Equipment Operators): @ $250/day x 3 days x 3 x 1 =	$1,050
TOTAL PERSONNEL SERVICE COST	**$1,050**
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	
Backhoe @ $389/day x 3 days x 1 =	$1,167
Dump truck 5 yd. @$765/week x 1 weeks x 1 =	$765
D-6 dozer @ $1056/day x 3 days x 1 =	$3,168
Move in/out @$560/day x 2 days x 1=	$1,120
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	**$6,220**
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	
Equipment fuel	$1,000
TOTAL MATERIALS AND SUPPLY COST	**$1,000**
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	
GSA Vehicle @ $200/week x 1 weeks =	$200
Per Diem $164 x 3 x 1=	$492
TOTAL TRAVEL COST	**$692**
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	
TOTAL CONTRACT COST	**$8,962**

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISH MENTS	PLANNED COST
2014	9/5/2014	09/30/2013	F-S	Basins	$8,962	1	$8,962
						TOTAL	**$8,962**

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	E
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	P,T
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

See Patch Spring BAER Amendment Emergency Stabilization Treatment Map, Appendix IV.

APPENDIX I **RESOURCE ASSESSMENT**

HYDROLOGIC RESOURCE ASSESSMENT

EXECUTIVE SUMMARY

This Supplemental Emergency Stabilization (ES) Plan addresses the impacts to the community of Skull Valley Band of Goshute Indians from the floods of August 2014. This Flood Assessment is a second supplemental assessment of conditions related to the Patch Springs Fire (started Aug. 10, 2013; contained Aug. 25, 2013). Treatments installed as a result of the first Supplemental ES Plan were effective in protecting the Skull Valley Goshute Community from the floods that occurred up until this time. It was identified that these treatments have reached capacity to detain sediment and direct flood flows, yet continued high flows and sedimentation events are expected. The Emergency Stabilization treatments specified in this plan are maintenance and rehabilitation of treatments specified in the first supplemental ES plan. It is recommended that the Tribe seek collaboration from Federal and State agencies to find long-term solutions to anticipated flood and sedimentation threats.

I. OBJECTIVES

- Assess flood damage from the August 2014 precipitation events to existing treatments that were installed last year due to the Patch Spring fire.
- Identify mitigation issues to the existing treatments that would affect threats to life, property, and critical natural and cultural resources in relation to flooding, erosion, and sediment deposition.
- Develop treatment recommendations.

II. ISSUES

- Increased runoff, erosion and sediment delivery associated one year after the Patch Spring fire has occurred within the Indian Hickman and Dry drainages.
- Trails and roads threatened by recent and new potential flooding impeding access to locations east of the Skull Valley Indian Reservation community.
- Threats to residential structures and infrastructure within the community on the Skull Valley Indian Reservation.
- Destruction of the existing irrigation diversion and culinary water delivery system located in Indian Hickman drainage Skull Valley Indian Reservation from recent flooding events.
- Solutions to mitigate long term flood threats from Indian Hickman drainage.

III. OBSERVATIONS

Background – The Patch Springs Fire burned within the Stansbury Management Area, Salt Lake Ranger District, Uinta-Wasatch-Cache National Forest in August 2013. During the month of August 2014 the Indian Hickman and Dry watersheds experienced intense rainstorm events. It is estimated that a maximum storm intensity of 2 inches per hour occurred in one event. Resulting from the August rain events, several hundreds of thousands of cubic yards of mud and debris were mobilized in Indian Hickman Canyon and onto the alluvial fan further destroying the irrigation diversion and the delivery system. The treatments that were installed from last year's BAER plan were impacted with mud, rock and debris. Flooding over-topped the K-rail structure east of the irrigation pond, the rolling dip near the east pump house, and the gravel pit pond embankment. This over top flooding reached residential structures and road infrastructure downstream of the treatments. The culinary water system was also washed out and is temporarily repaired, and a large portion of the upper road to the irrigation diversion is completely destroyed. Peak flow volume (including sediment and debris) near the irrigation diversion at the mouth of Indian Hickman Canyon was estimated to be as much as 10,000-15,000 cubic feet per second.

Reconnaissance Methodology and Results

Reconnaissance of the impacts from the flooding event that occurred in early August involved driving and walking to last year's treatments as well as the irrigation diversion. The amount of material deposited, the topography and potential values at risk were noted.

Findings – The early August rain events overwhelmed the existing shallow channels and deposited large amounts of mud, rock and debris upstream of the K-rail structure. Extreme amounts of rock and debris are in the main Indian Hickman drainage between the irrigation diversion and Skull Valley Indian Reservation community. The drainage is divided into two channels, a north and a south channel which flow around each side of the community.

The existing BAER treatments function to the best of their design, but need to be strengthen and enhanced to prevent further flooding of the community and associated infrastructure. The community was affected from the overtopping of the K-rails and rolling dips near the pump house, and the berm near the garden area, without these treatments flooding would have been worse with the potential to destroy residential structures. The cemeteries were not affected by this runoff event due to the channelization of the drainage.

Watershed Response – The watershed response in the Indian Hickman drainage is very high, which is a condition to be expected below the steep slopes of Stansbury Mountains that experienced moderate and high soil burn severity resulting from the Patch Springs fire and the alluvial fan channels and colluvial depositional areas below where the Skull Valley Goshute Community is located.

The burned area near the irrigation diversion shows very little recovery after one year, probably due to drought conditions, little seed source, and rocky shallow soils. If this is an indicator of the recovery in the main watershed above the

irrigation diversion, this could be one of the main reasons why flooding is extreme. Until there is natural recovery of annual grasses and other vegetation, as well as long-term reestablishment of the shrub component there will be a flooding in the future.

IV. RECOMMENDATIONS
Emergency Stabilization

1. **Project Administration –** This is funding for a Implementation leader to oversee the installation of recommended treatment repairs. This spec. Includes salary and overhead costs.

2. **Rolling Dips –** It is recommended that at two sites, one on the road above the pump house and the second at the southern end of the K-rails east of the irrigation pond.

3. **K-Rails & Sandbags –** Place about 400 feet of K-Rails, (34 of them) above the existing K-rails in three places along the existing K-rails east of the irrigation pond. Also extend the south end of this K-rail wall about 50 feet (four K-rails). The east K-rails that split the channels will be removed and used to enhance the long K-rail structure near the irrigation pond. Additional sandbags will be used to prevent water from piping around the new K-rail installation.

4. **Earthen Berm Installation –** Berms will be placed around the west and east pump houses, the existing berm near the garden will be replaced and made larger pond embankment will be removed and replaced with a 36 inch culvert. This pond was over topped and an additional culvert will help prevent this in the future.

5. **Sediment Basins Cleaning and Removal –** The gravel pit pond experience heavy runoff and sediment deposition. The sediment will be sloped back to the culverts and fill material will be deposited on the embankment slopes and top to strengthen the embankment. The downstream embankment slope will also be re-sloped.

V. REHABILITATION

There are no recommendations for emergency rehabilitation.

VI. MANAGEMENT RECOMENDATIONS (Non-Specification Related)

It is recommended that the Tribe seek long-term solutions to flooding and sedimentation that can be expected in the future due to the location of the community upon an alluvial fan – a geologic setting that is very dynamic. Consultation and collaboration with the following entities is recommended:

- U.S. Army Corps of Engineers – for long-term flood and sedimentation protection design

- Utah Department of Transportation – for improvements to drainage and safety on UT State Highway 196

- National Weather Service – in consideration of installing an early warning system for flood threats to the community.

- Natural Resources Conservation Service – for long term solutions for irrigation water infrastructure and other flooding issues.

- Utah Department of Public Safety and Department of Emergency Management

- USDA Forest Service – for further consultation on possible treatments to stabilize watershed conditions on National Forest lands and within the Patch Springs Fire area.

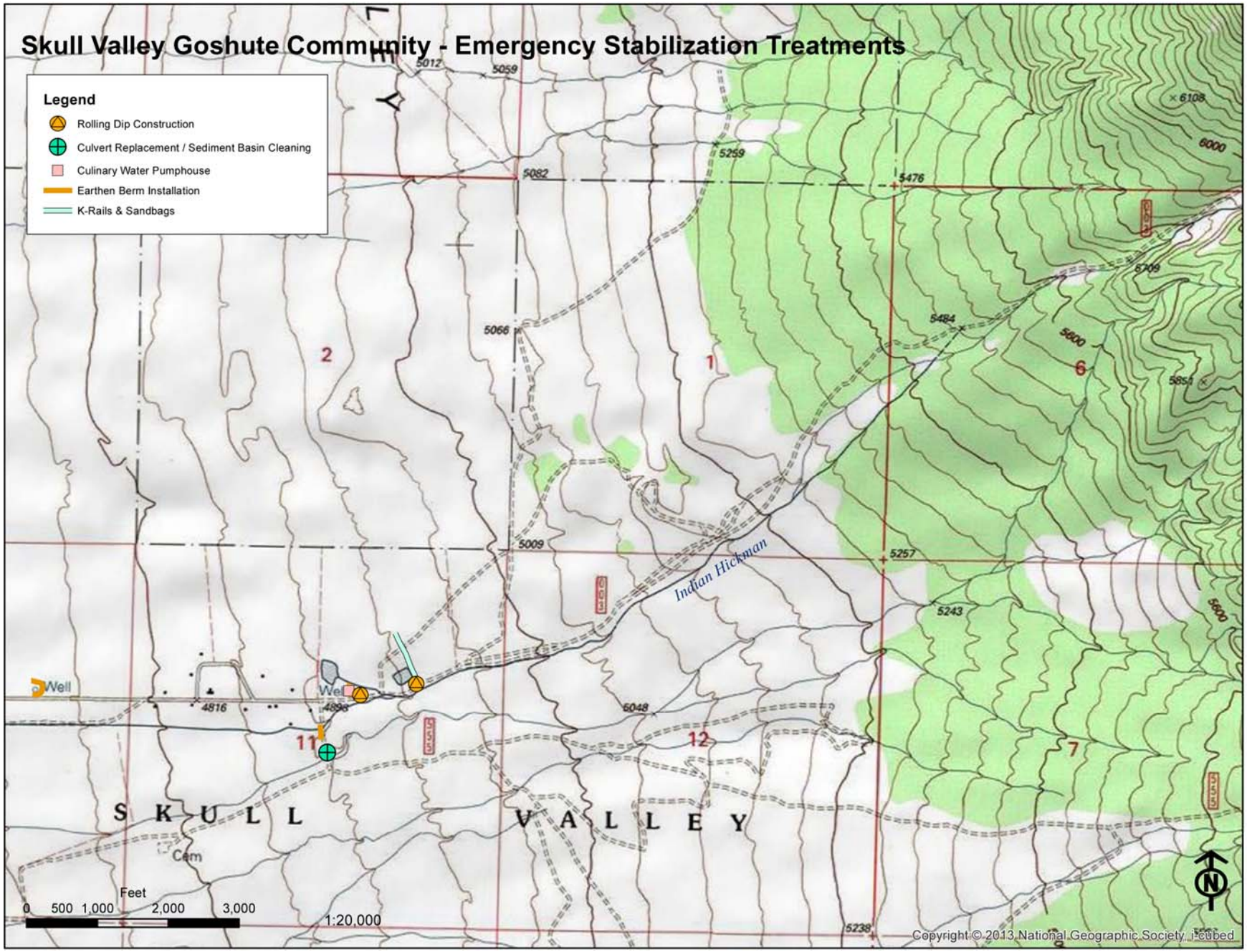
A specific recommendation identified in this flood assessment for long-term flooding is to relocate the road between the community of residences and the ponds, as this road collects flood flows from the Indian Hickman drainage into the residential area.

VII. CONSULTATIONS

Matt Bear, Skull Valley Goshute Tribal Member
Lori Bear, Skull Valley Goshute Tribal Chairwoman
Anthony D. Beals, NRCS Resource Conservationist
Aimee Rohner, NRCS Engineer
Anna Boynton, DPS-DEM
Kevin Barjenbruch, National Weather Service
Darryl Martinez, BIA Tri-Regional BAER Coordinator

VIII. REFERENCES

Rebecca Biglow, BAES
William Sims, BAES


Skull Valley Goshute Community - Emergency Stabilization Treatments
Legend
Rolling Dip Construction
Culvert Replacement / Sediment Basin Cleaning
Culinary Water Pumphouse
Earthen Berm Installation
K-Rails & Sandbags
Indian Hickman
SKULL VALLEY
Well
Well
Cem
Feet
0 500 1,000 2,000 3,000
1:20,000
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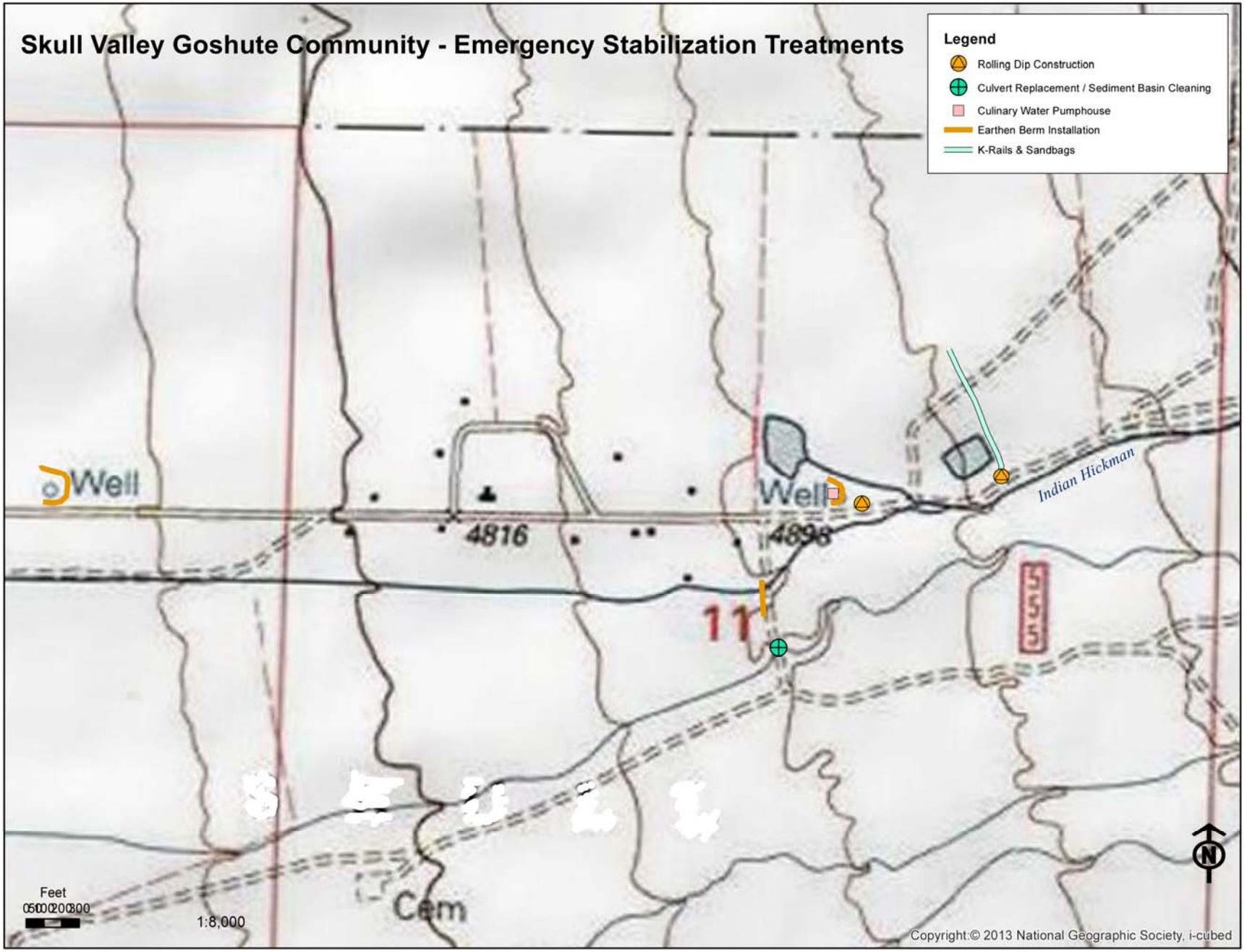
Skull Valley Goshute Community - Emergency Stabilization Treatments
Legend
Rolling Dip Construction
Culvert Replacement / Sediment Basin Cleaning
Culinary Water Pumphouse
Earthen Berm Installation
K-Rails & Sandbags
Well
Well
4816
4898
Indian Hickman
11
Cem
Feet
0 500 1,000 2,000 3,000
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View up Indian Hickman drainage: debris flow deposit on middle-section of alluvial fan, above Skull Valley Goshute Community.

Irrigation water intake distribution box located at the mouth of Indian Hickman Canyon: debris flows of August 2014 destroyed functionality of Indian Hickman Canyon water diversion system.

Broken pipeline of Indian Hickman Canyon water diversion system. View up Indian Hickman Canyon.

ES specifications 5 and 6 for supplemental plan #2. Landfill access road crossing where an additional 36-in. culvert will be installed and debris basin will be cleaned.

ES specification 4: One of three locations to construct an earthen berm around the culinary water pumphouse (2 buildings to the right).

ES specification 3: K-rails installed in 2013 effectively protected structures during floods of 2014, but are at capacity resulting from deposited sediment. ES spec 3 will add a second row of K-rails and sandbags to protect community from anticipated future flows.