Draft
Environmental Assessment
and
Finding of No Significant Impact
for the
Installation and Temporary Operation of
Bypass Pumps at Bonito Lake,
Lincoln County, New Mexico

Prepared by

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of Engineers®
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Bypass Pumps at Bonito Lake,
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In response to the June 2012 Little Bear Wildfire, the U.S. Army Corps of Engineers, Albuquerque District (Corps) provided emergency operations flood fighting-direct assistance under P.L. 84-99, Section 210 (Undertaking), to the City of Alamogordo (City), owner of Bonito Lake and Dam. The Corps temporarily contracted for the installation and operation of two bypass pumps at Bonito Lake, in Lincoln County, New Mexico for seven days to support draining the lake. The two Corps' pumps were co-located with other pumps obtained by the City in a staging area established by the City. Draining Bonito Lake provided additional space for managing potentially large monsoonal runoff inflows with debris and sediment. The ability of Bonito Lake to temporarily store the next runoff inflow serves to delay destructive downstream flooding from the Little Bear Wildfire burn scar. The Corps determined that the bypass pump installation was appropriate under its Readiness Contingency Operations authority. The Corps is authorized to lend/issue emergency supplies as "supplemental" support to local interests and the state during flood fight operations. Typical emergency supplies and activities include advance rental or procurement of flood fight equipment such as pumps.

Bonito Lake is a critical fresh water supply for the City and for Holloman Air Force Base. Flooding on 5 July 2012 caused Bonito Dam's water intake tower and outlet pipes to silt in and become blocked with ash and woody debris, preventing any release of water out of the lake. Therefore, the structural integrity of the dam was threatened and there was a potential for flooding downstream. Attempts to clear the outlet pipes were unsuccessful. In order to reduce the threat to the dam, the City determined to try to pump lake water over the dam and back into the Rio Bonito. At the time this work was conducted, this was considered an emergency action. The City, utilizing two of their own pumps and one pump borrowed from the U.S. Bureau of Reclamation, utilized the east shore of the lake for access to an area for staging near the dam, to set up the portable pumps. As a part of Federal emergency assistance, the Corps contracted for two 12-inch pumps to be deployed to Bonito Lake; those pumps and operating personnel arrived at Bonito Lake on July 9th and became operational over the next two days. The Corps' two contracted pumps were co-located with the City's pumps. After 7 days of pumping, the Corps pumping contract was turned over to the City (July 19, 2012). The Corps determined to prepare an after-the-fact Environmental Assessment that includes an archaeological survey of the pumping staging area and access route (project area) initially utilized by the City. Currently, water levels in Bonito Lake have been pumped down to a safe level and risk of flooding from above the dam has been significantly reduced.

Under the No-Action alternative, monsoonal rainstorm events could have filled Bonito Lake with sediment resulting in overtopping or damage to the dam, resulting in downstream flooding and

damage to private property and public infrastructure. The No-Action alternative was perceived as increasing the potential for downstream flood damage.

This project is in compliance with the National Historic Preservation Act of 1966, as amended [16 U.S.C. 470 et seq]. The Corps has a conducted both a database search and an archaeological survey of the disturbed project area. Bonito Dam itself is a historic structure from the early 1930s. The Corps also determined that should the dam fail, more than 22 previously documented archaeological sites located downstream of the dam along the Rio Bonito, including the historic Fort Stanton Military Reservation, could be affected by flooding. No prehistoric or historic archaeological sites or other historic properties were found during cultural resources surveys or are known to occur within or immediately adjacent to the project area. The Corps has received no indication of tribal concerns that would impact this project. Based on the negative archaeological survey and the prior disturbed nature of the area, the Corps is of the opinion that the use of the access route and pumping/staging area resulted in "No Historic Properties Affected."

The proposed work did not affect waters of the United States regulated by Section 404 of the Clean Water Act (CWA; 33 U.S.C. 1251 et seq.); therefore a Section 404(b)(1) analysis was not be needed for the project. The installation and operation of the two bypass pumps at Bonito Lake occurred on the exposed shoreline and did not significantly alter any use or natural feature of the area. Therefore, the planned action is consistent with Executive Order 11988 (Floodplain Management). The proposed work complies with Executive Order 11990 (Protection of Wetlands) as no wetlands are within the project area.

Special status species known to occur in the general area include the Mexican Spotted Owl. However, the project area lacks the principal constituent elements for this species, and they are not likely to use the area. The Little Bear Fire (44,000 acres) had significant impacts on wildlife, fish and vegetation and their associated habitat. The land around Bonito Lake is owned and managed by the City of Alamogordo, and does not provide essential critical habitat elements for the Mexican Spotted Owl. No vegetation was removed and no construction occurred for placing the pumps adjacent to the dam. As required by the Endangered Species Act, the Corps has determined that the installation and operation of the bypass pumps at Bonito Lake had no effect on threatened or endangered species, or their designated or proposed critical habitat receiving protection under the Endangered Species Act.

The bypass pumps installation did not involve construction. The following elements have been analyzed and were not significantly affected by the installation and planned operation of the bypass pumps: air quality; land use; soils; climate and climate change; biological resources including vegetation, wildlife, and endangered and threatened species; noise levels; aesthetics; socioeconomic environment; hydrology and hydraulics; water quality; floodplains; waters of the United States including wetlands; prime farmland; and cultural resources.

Best Management Practices (BMPs) that were employed during the installation and operation of the two bypass pumps at Bonito Lake included locating the pumps on the exposed shoreline and routing the bypass lines along the road adjacent to the dam. Only short-term, minor adverse impacts to land use, water resources aesthetics, soils, air, noise, vegetation, and wildlife occurred during construction. No long-term impacts would occur to land use, water resources, climate,

soils, air, wetlands or other waters of the U.S., special status wildlife species or their habitat, floodplains, socioeconomics, environmental justice or cultural resources. There were likely minor beneficial impacts to human health. There were also important beneficial effects for public safety, property, and infrastructure, along with historic and cultural properties downstream of the dam. The proposed project did not result in any moderate or significant, short-term, long-term, or cumulative adverse effects.

The emergency action has been fully coordinated with Federal, state, tribal, and local governments with jurisdiction over the ecological, cultural, and hydrological resources of the study area. Based upon these factors, the proposed action did not have a significant effect on the human environment. Therefore, an Environmental Impact Statement will not be prepared for the bypass pumps project.

Date

Antoinette R. Gant
Lieutenant Colonel, U.S. Army
District Commander

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1 INTRODUCTION

1.1 Background and Location

This Environmental Assessment (EA) addresses impacts associated with the placement of bypass pumps at Bonito Lake in Lincoln County, New Mexico. Bonito Lake is an alpine reservoir located in the Sacramento mountains (elevation 7377 ft), approximately 10 miles northwest of Ruidoso, Lincoln County, New Mexico (see Figure 1). The lake is owned and managed by the City of Alamogordo (City), and supplies drinking water to Alamogordo, Carrizozo, Fort Stanton, Nogal and Holloman Air Force Base. The lake covers about 46 acres with a maximum depth of 70 feet. Rio Bonito feeds Bonito Lake, and continues downstream from the dam to Fort Stanton and Hondo. Because of the high altitude, Bonito Lake supported a rainbow trout (*Oncorhychus mykiss)* fishery (coldwater) along with several campgrounds and hiking trails around the lake. The property is surrounded by the Lincoln National Forest.

In 1907 the Southern Pacific Railroad built a small dam in South Fork Canyon to provide water for the steam locomotives of the era. In the 1920s the State of New Mexico permitted the railroad to build a larger dam across a narrow spot on Bonito Creek downstream from the town of Bonito, NM. This location, however, meant that the town of Bonito City would be flooded by the dam's lake. The people living in Bonito City were given land further down the canyon, and the entire town was moved downstream to a new location. The dam was completed in 1931, and by the 1950s, the railroad no longer needed the water from the lake and sold the lake to the city of Alamogordo to provide the town's drinking water. A 90-mile (140 km) steel pipeline was built to Alamogordo's "La Luz" water treatment plant.

In June of 2012, the Little Bear Fire burned a total area of 44,330 acres across six watersheds, including the Rio Bonito, in the Sacramento Mountains adjacent to Ruidoso, Alto, and Angus, New Mexico (U.S. Forest Service. 2012). Approximately 35,300 acres of the Lincoln National Forest, Smokey Bear Ranger District was burned.

1.2 Purpose and Need

The Corps contracted for installation and operation of bypass pumps at Bonito Lake, NM for seven days to support draining the lake. The potential for destructive debris flows is a serious concern in the canyons across the burn scar, including those upstream from Bonito Lake. A debris flow is a mixture of water and solids (sediment, stones, boulders, timber) which flows downhill in channels. Debris flows have a high destructive potential, comparable with rockfall, avalanche and flood water, threatening the property and public safety downstream.

In response to the June 2012 Little Bear Wildfire, the Corps provided emergency operations flood fighting-direct assistance under P.L. 84-99, Section 210 (Undertaking), to the City of Alamogordo (City), owner of Bonito Lake and Dam. Bonito Lake is a critical fresh water supply for the City and for Holloman Air Force Base. The ability of Bonito Lake to temporarily store

the next runoff inflow and sediment serves to delay downstream flooding from the Little Bear Wildfire burn scar for the protection of homes, businesses and state highways downstream of the dam. Flooding on 5 July 2012 caused Bonito Dam's water intake tower and outlet pipes to silt in and become blocked with ash and woody debris, preventing any release of water out of the lake, endangering public safety and dam safety. Therefore, the structural integrity of the dam was threatened and there was a potential for flooding downstream. Attempts to clear the outlet pipes were unsuccessful.

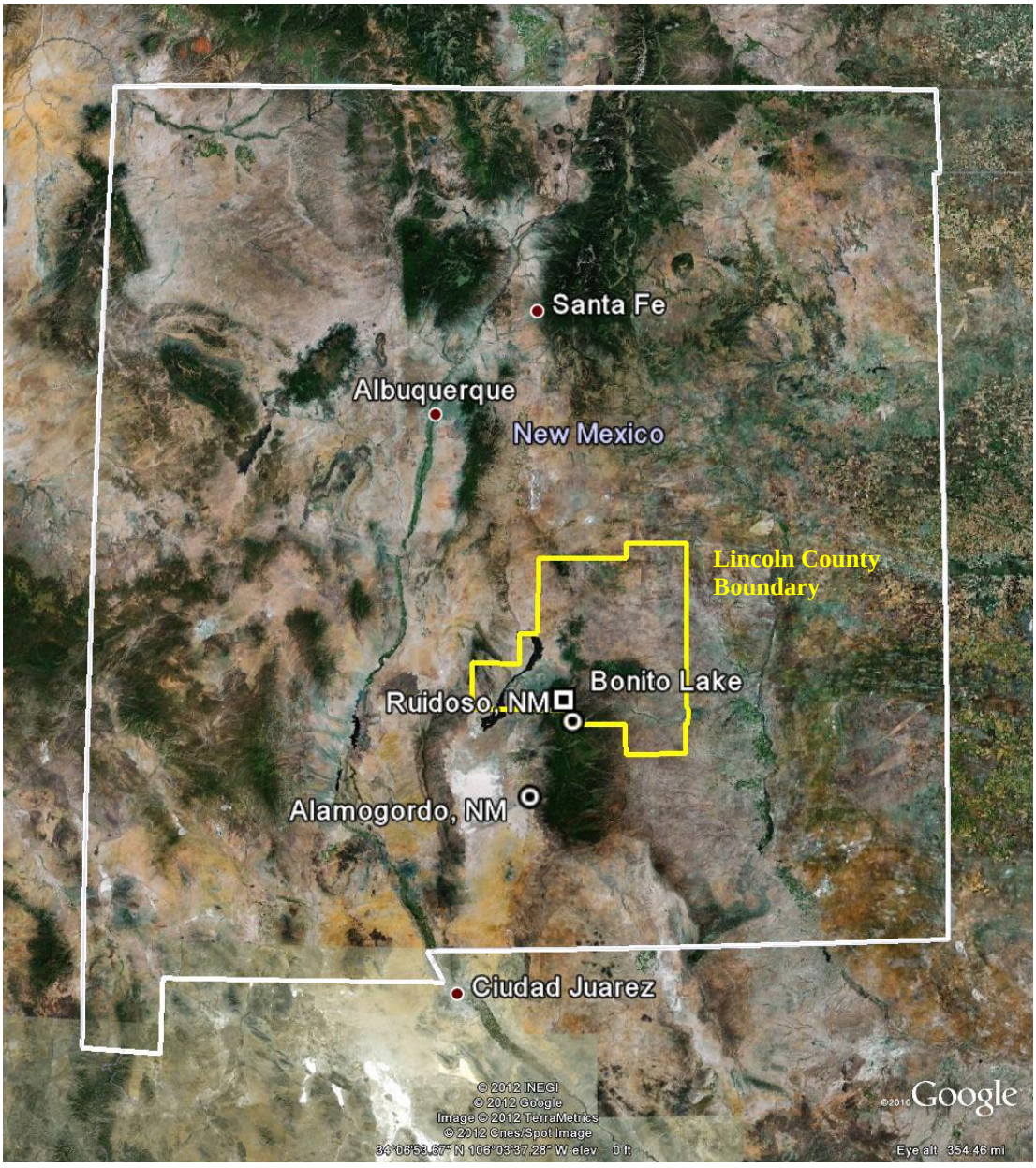

Figure 1. Location of Bonito Lake, NM (Latitude: 33.45583: Longitude: -105.73111:

Elevation: 7377 ft).

In order to reduce the threat to the dam, the City determined to try to pump lake water over the dam and back into the Rio Bonito to provide additional space for managing large runoff inflows, debris and sediment entering the lake. At the time this work was conducted, this was considered an emergency action. The City, utilizing two of their own pumps and one pump borrowed from the U.S. Bureau of Reclamation, utilized the east shore of the lake for access to an area for staging near the dam, to set up the portable pumps. As a part of Federal emergency assistance, the Corps contracted for two 12-inch pumps to be deployed to Bonito Lake; those pumps and operating personnel arrived at Bonito Lake on July 9th and became operational on July 11, 2012. The Corps' two contracted pumps were co-located with the City's pumps. The Corps' contract operated the pumps for seven days (July 12-19, 2012). The Corps' pumping contract was turned over to the City (July 19, 2012). The Corps determined to prepare an after-the-fact Environmental Assessment that includes an archaeological survey of the pumping staging area and access route (project area) initially utilized by the City. Currently, water levels in Bonito Lake have been pumped down to a safe level and risk of flooding from above the dam has been significantly reduced.

A preliminary assessment of the burn scar area upstream of Bonito Lake indicated a high likelihood of landslides from burned areas with a high likelihood of debris flow initiation in all tributaries and side canyons (USACE 2012). The most probable scenario is that debris flows will impact the main Rio Bonito channel by either flowing along the channel (ripping it up), or blocking the channel creating temporary dams. The most dangerous scenario is that the north tributaries (Littleton Canyon and Kraut Canyon) will deliver a debris flow directly to the lake, near the dam. No attempt was made to estimate the size of debris materials from one of these events. However, the sediment and woody debris would fill any available space in the lake and could bury and/or damage the water supply infrastructure.

Bonito Lake has experienced heavy silting and damage from monsoonal rain events on June 22, July 5-6-7, 2012. Over 2/3 of the lake has been silted in with ash and debris from the burn scar of the Little Bear Fire. The water intake tower in the lake was damaged and several large logs are now against the dam. The outlet pipes were blocked by debris, preventing any release of water out of the lake. Attempts to clear the outlet pipes were unsuccessful. The City of Alamogordo started draining the lake after the June 22, 2012 rainfall event.

Debris is expected to be a concern for several years, until the watersheds become revegetated and stabilize. Soils in the burned area lack vegetative cover that would help absorb rainfall, and soils in portions of the burned area have become water repellent and less able to absorb moisture. This causes an increase in runoff from even small rain events, scouring soil and carrying sediment, rocks, woody debris and other material downstream.

1.3 Regulatory Compliance

This Environmental Assessment (EA) was prepared by the Corps, Albuquerque District, in compliance with all applicable Federal Statutes, Regulations, and Executive Orders, including the following:

- National Historic Preservation Act (16 U.S.C. 470 *et seq*.)
- Archaeological Resources Protection Act (16 U.S.C. 470 *et seq*.)
- Clean Water Act (33 U.S.C. 1251 *et seq.*)
- Clean Air Act (42 U.S.C. 7401 *et seq.*)
- Endangered Species Act (16 U.S.C. 1531 *et seq*.)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations
- Occupational Safety and Health Act of 1970 (29 U.S.C. 651 *et seq*.)
- Executive Order 11988, Floodplain Management
- National Environmental Policy Act (42 U.S.C. 4321 *et seq*.)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500 *et seq*.)
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq*.)
- Executive Order 11593, Protection and Enhancement of the Cultural Environment
- Executive Order 11990, Protection of Wetlands
- U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR Part 230; ER 200-2-2)
- Farmland Protection Policy Act (7 U.S.C. 4201 *et seq*.)
- Executive Order 13112, Invasive Species
- Federal Noxious Weed Act (7 U.S.C. 2814)
- Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*)
- Fish and Wildlife Coordination Act (48 Stat. 401; 16 USC 661 *et. seq.*)
- Section 438 of the Energy Independence and Security Act of 2007 (Public Law 110-140 Section 438, 121 Stat. 1492, 1620)
- Executive Order 13524, Federal Leadership in Environmental, Energy, and Economic Performance

This EA also reflects compliance with all applicable State and local regulations, statutes, policies, and standards for conserving the environment such as water and air quality, endangered plants and animals, and cultural resources.

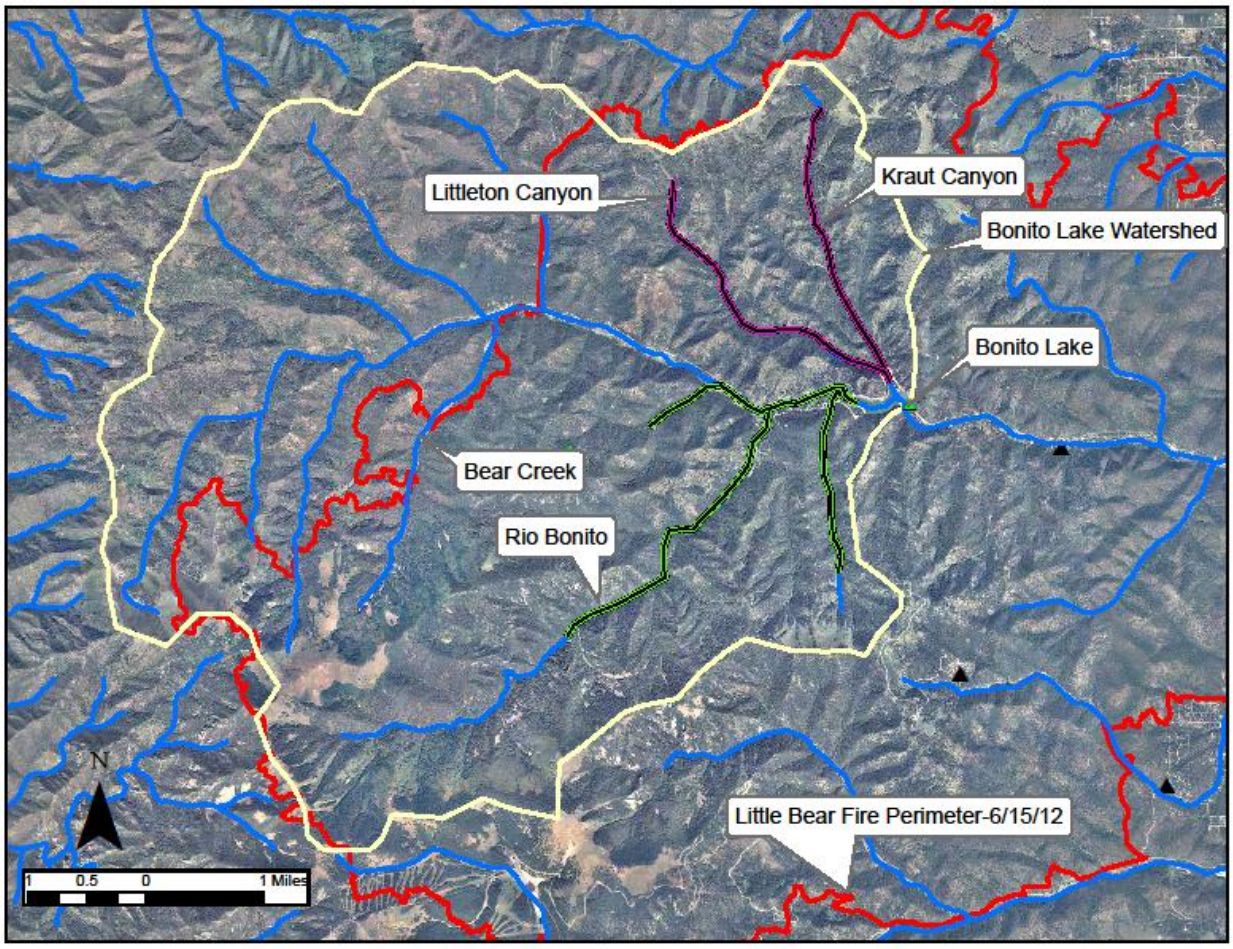

Figure 2. Rio Bonito Watershed Impacted by the Little Bear Fire.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Corps contracted for installation and operation of bypass pumps at Bonito Lake, NM for seven days. The pumps and discharge lines were transported to Bonito Lake using existing roads. Two DV-200C self priming, diesel, sound attenuated, bypass pumps (150-200 hp) were installed (July 11, 2012) on the exposed shoreline adjacent to the lake with 10" aluminum discharge lines (see Figure 4). No vegetation was removed for installation or subsequent relocation of the pumps. The pumps were initially located close to the water's edge, and relocated closer to the water's edge as needed to maximize pumping volume as the lake water surface elevation decreased. The staging area was cleared of fire debris for relocating the portable pumps as necessary (Figures 9-10). The 150-1000' discharge lines released water onto the roadway (Figure 9) near the dam between 3000-3800 gallons per minute (gpm; 6.7-8.4 cubic feet per second). The water flowed down the road and slope back to the Rio Bonito. The contractor operated the pumps continuously (24 hours / day) from July 12-19, 2012. The City of Alamogordo initiated their pumping contract with the vendor on July 19, 2012 assuming fiscal responsibility for continued pumping of the lake.

2.2 The No Action Alternative

Under the No Action Alternative, pumping to lower the lake surface level would have been delayed. Under the No Action Alternative, the delay in lowering the lake level would have increased the risk of uncontrolled spillway flows with debris and associated damages to the dam and the Rio Bonito downstream. Damage to the dam and outlet structure is more likely under the No Action Alternative.

3 EXISTING ENVIRONMENT AND FORESEEABLE EFFECTS

The following general summary of the physical environment of Bonito Lake is sufficient for the purposes of analyzing the impacts of the pumping. For purposes of this analysis, "short-term" effects are those that occurred during installation and operation of the pumps by the U.S. Army Corps of Engineers.

3.1 Physical Environment, Geology, and Soils

Bonito Lake is an alpine reservoir located on the Rio Bonito in the Sacramento mountains (elevation 7377 ft), approximately 10 miles northwest of Ruidoso, Lincoln County, New Mexico (Figure 1). The coldwater lake covers about 46 acres with a maximum depth of 70 feet. Bonito Lake flows into the Rio Bonito which runs downstream from the dam to Fort Stanton and Hondo. Because of the altitude, Bonito Lake supported a rainbow trout (*Oncorhychus mykiss)* fishery. The property is surrounded by the Lincoln National Forest.

3.1.1 **Soils**

The Burn Area Emergency Response Team (BAER Team) determined there is an increased risk for surface soil erosion and sediment delivery to Bonito Lake as an effect of the Little Bear Fire (U.S. Forest Service 2012). The increased erosion from moderately steep slopes pose an extreme threat to long-term soil productivity, increased risk of water quality impacts, and threats to downstream resources and property from bulking of flood flows.

Soils in burn areas may become water repellent (hydrophobic), particularly within high burn intensity areas (U.S. Forest Service 2012). The BAER Team evaluated several sites in burned watersheds to identify the presence of hydrophobic layers, the degree of repellency, and the extent of the repellent layers. The team used this information to evaluate the hydrologic response and hazard of the burned watershed. Neither the bypass pumps nor the No Action Alternative would have an effect on soils in the project area.

3.2 Climate and Climate Change

The climate of south-central New Mexico can be generally characterized as semi-arid continental, with mild summer and cold winter temperatures. The average precipitation for Ruidoso, 10 miles south of the Bonito Lake area is approximately 23 inches per year, and about 60 percent of this moisture falls between June and September (U.S. Climate Data 2012). Summer moisture is carried into the state by southerly and southeasterly air circulation from the Gulf of Mexico and is usually released in brief, often intense thunderstorms. Winter moisture is carried into the state by eastward-moving storms from the Pacific Ocean and is often blocked from reaching the project area by other mountain ranges to the north and west with snowfall averaging 38.2 inches annually.

Temperatures in the area are influenced both by elevation (approximately 7,350 to 7,400 feet above sea level) and the highly variable topography. The mean annual temperature is close to 50

degrees F. Winds in the area are predominantly from the west-southwest during the spring (when strongest) and shift to the north-northwest during the rest of the year.

Climate change refers to any significant change in measures of climate such as temperature, precipitation, or wind patterns lasting for an extended period such as decades or longer. Climate change may result from: natural factors; natural processes within the climate system; and human activities that change the atmosphere's composition through burning fossil fuels or changes in the land surface such as deforestation, urbanization and desertification (U.S. EPA 2009).

Average air and sea-surface temperatures worldwide are predicted to increase beyond the current range of natural variability as human activities have, in the period since the onset of the Industrial Revolution, caused an accumulation of greenhouse gases (e.g. carbon dioxide) in the global atmosphere (U.S. EPA 2009). As a result of climate change, summer air temperatures in the southwestern United States are predicted to rise considerably from 2011 through 2039, average annual precipitation is expected to decrease, and mountain snowpacks are predicted to decrease significantly.

The bypass pumps would not be affected by hydrologic changes induced by climate change. The carbon dioxide emissions from operating the pumps are small and temporary. Neither the bypass pumps nor the No Action Alternative would have an effect on climate or climate change.

3.3 Floodplains and Wetlands

Riparian areas are anticipated to be damaged or lost by changes in peak flows, channel erosion, and deposition of ash, sediment and debris from upstream areas (U.S. Forest Service 2012). Loss of streamside shade by riparian vegetation will result in warming of surface waters. The pumps were located adjacent to the spillway at Bonito Lake. No wetland or riparian vegetation was removed and no construction occurred for placing the pumps adjacent to the dam spillway. Therefore, the bypass pumps and the No Action Alternative would have no effect on floodplain or wetland communities around Bonito Lake.

3.4 Water Resources

The coldwater lake covers about 46 acres with a maximum depth of 70 feet. Bonito Lake flows into the Rio Bonito which runs downstream from the dam Hondo. Runoff debris from the burn scar has already altered the lake. Operation of the bypass pumps would lower the water surface elevation of Bonito Lake to prevent breaching of the dam and support removal of debris. The No Action Alternative would result in the accumulation of large debris and sediment in the lake.

3.5 Hydrology and Water Quality

The watershed upstream from Bonito Lake drains an area of 33 square miles in the Sacramento Mountains, New Mexico. The BAER Team predicted that water quality will be degraded due to ash and sediment deposition post fire in all watersheds affected by the burn (U.S. Forest Service 2012). The hydrologic function of the watersheds will be degraded due to the loss of vegetative

ground cover and increased erosion. The loss of streamside shade by riparian vegetation will result in warming of surface waters, resulting in impacts to or loss of aquatic habitat for coldwater fish and macro- invertebrates.

The deposition of ash, sediment and debris from upstream areas into Bonito Lake have and will continue to have an adverse effect on water quality in the lake, and downstream of the lake (U.S. Forest Service 2012). Some of the sediment and debris carried into the lake will settle out while the lighter ash and finer sediments will remain suspended in the water column. Allowing the lake to fill with ash, sediment and debris to the spillway elevation will have an adverse effect on downstream water quality. However, while lowering the lake level using the outlet works or pumping will transfer suspended sediments into the Rio Bonito downstream of the lake, larger debris and sediment will be retained.

Operation of the bypass pumps would not increase the adverse effect from the burn scar on the water quality or hydrology at Bonito Lake or downstream on the Rio Bonito. The No Action Alternative would result in larger debris and sediment spilling over the dam.

3.6 Air Quality, Noise, and Aesthetics

Air quality in the Bonito Lake area is generally good. This part of Lincoln County is in attainment of air quality standards (U.S. EPA 2012). The nearest air quality monitoring station is in Las Cruces (New Mexico Environment Department Air Quality Bureau 2012). The placement and operation of the bypass pumps and the No Action Alternative do not involve construction. The bypass pumps are a temporary emission source operational for seven days. There would be no change in vehicle use or other sources of dust or particulates. The bypass pumps and the No Action Alternative would have no effect on air quality.

Noise is generally minimal in the undeveloped setting of Bonito Lake. The sound-attenuated bypass pumps are a temporary source of noise operational for seven days. There would be no new sources of noise, and no change to noise levels from the bypass pumps or the No Action Alternative.

There may be a minor visual aesthetic impact from the bypass pumps. The bypass pumps and pipes constitute equipment placed adjacent to the dam in contrast with the otherwise natural setting, and floating debris is expected to be trapped in the area. The No Action Alternative would also change the aesthetics of the lake, as debris would cover and fill a substantial part of the lake. Both the No Action Alternative and the emergency action would have minor adverse effects to visual aesthetics. These effects are short-term and would disappear when the bypass pumps are removed.

3.7 Vegetation Communities

The Bonito Lake project area is located within the Lincoln National Forest which is home to rare plants such as the White Mountain larkspur and Sierra Blanca cliff daisy (U.S. Forest Service 2012). Sensitive plant species impacted by the fire and subject to post-fire effects include: Sierra

Blanca cliff daisy, White Mountain larkspur, Gooding's onion, Wooten's hawthorn, Cardinal beardtongue, and eggleaf coraldrops. Post-wildfire effects may compromise riparian ecosystem structure and function. No vegetation was removed and no construction occurred for placing the pumps adjacent to the dam. Therefore, the bypass pumps and the No Action Alternative would have no effect on vegetation communities around Bonito Lake.

3.8 Noxious Weeds and Invasive Species

Bullthistle, musk thistle and cheatgrass populations exist in most of the watersheds affected by the fire (U.S. Forest Service 2012). Generally a 25% increase in non-native invasive plant species is seen after a major wildfire event. No vegetation was removed and no construction occurred for placing the pumps adjacent to the dam. Therefore, the bypass pumps and the No Action Alternative would have no effect on invasive species around Bonito Lake.

3.9 Wildlife

There are 55 mammal species and 195 bird species that potentially use montane habitat in the project area. A list of the Lincoln County, New Mexico wildlife and fish species, including the Bonito Lake area, can be found using the Biotic Information System of New Mexico (BISON-M, NMDGF 2012). Habitat for game species such as elk, mule deer and turkey also may be impacted as the entire fire perimeter lies within a Core Occupied Elk Range.

Bonito Lake is primarily a cold-water fishery consisting of rainbow trout (*Oncorhynchus mykiss*). The New Mexico Department of Game and Fish provides supplemental stocking of rainbow trout in the lake. Fisheries in the Bonito Lake watershed and Eagle Creek will experience significant damage or loss from sedimentation and debris flows from the burn scar area.

The 44,000 acre Little Bear Fire had significant impacts on wildlife, fish and rare plant populations and their associated habitats (U.S. Forest Service 2012). Over half of the total area burned at moderate to high intensity. Biological natural resource values at risk due to imminent post-wildfire threats such as flooding and erosion include: Northern Goshawk (*Accipiter gentilis*), Bald Eagle (*Haliaeetus leucocephalus alascanus*), Sacramento Mountains salamander (*Aneides hardii*), and Mexican Spotted Owl (*Strix occidentalis lucida*). The Mexican Spotted Owl is the only federally listed species that could potentially occur in the project area. The effects of the action will be discussed under the special status species section.

The Northern Goshawk in New Mexico has been identified as an imperiled breeding population (NMNHP, 1997) and a species of greatest conservation need (NMDGF, 2006). Northern goshawk habitat impacted included 34,000 acres in Foraging Areas, of which 4,000 acres are in Post-Fledging Family Areas (PFAs) and 1,200 acres are in Nest Areas (U.S. Forest Service 2012). Five out of seven PFAs had moderate or high intensity burns over greater than 50% of the area. Bald eagle wintering areas (300 acres moderately or highly burned) and Peregrine falcon eyrie protection zones were also affected by the fire (U.S. Forest Service 2012). Sensitive raptor species may be subject to loss due to erosion impacting prey habitat and availability.

Sacramento mountain salamanders (*Aneides hardii*), which only occurs in 3 mountain ranges in New Mexico, inhabits mixed conifer forests above 8,000 feet (Degenhart et al., 1996). Over 20,000 acres of this habitat type were impacted by the fire (U.S. Forest Service 2012). Salamanders could experience direct mortality and habitat loss due to the wildfire and post-wildfire threats. A key element of the preferred habitat for this species seems to be a substantial forest canopy, along with cover such as rocks and various kinds of organic litter (Degenhart et al., 1996). The salamanders are associated with higher densities of fir and spruce (Ramotnik and Scott 1988). They can be found under both deciduous and coniferous logs, but they are most often found under coniferous (Douglas fir) logs (Ramotnik, 1997). These animals spend much of the time below the surface, coming out when conditions are humid. It is believed that individuals move to subterranean cavities to avoid freezing temperatures. The critical thermal maximum for this species is about 33.25 C (Whitford 1968). Soil characteristics following fire and logging can influence the distribution of plethodontid salamanders that occupy the soil-litter interface, though they may persist after habitats have been altered (Ramotnik and Scott 1988).

There would be no effects to wildlife from the installation and operation of the pumps. Similarly, there would be no effect to wildlife from the No Action Alternative.

3.10 Special Status Species

Three agencies have a primary responsibility for the conservation of animal and plant species in New Mexico: the U.S. Fish and Wildlife Service (Service), under the authority of the Endangered Species Act of 1973 (as amended); the New Mexico Department of Game and Fish, under the authority of the Wildlife Conservation Act of 1974; and the New Mexico Energy, Mineral and Natural Resources Department, under authority of the New Mexico Endangered Plant Species Act and Rule No. NMFRCD 91-1. Each agency maintains a list of animal and or plant species that have been classified or are candidates for classification as endangered or threatened based on present status and potential threat to future survival and recruitment (Appendix A). Of these species, only those with potential to occur in the immediate project area are discussed below.

3.10.1 **Mexican Spotted Owl**

The Mexican Spotted Owl is a threatened species listed by the U.S. Fish and Wildlife Service (USFWS 1995), and protected under the Endangered Species Act (ESA) that occupies 23,900 acres of designated Critical Habitat within the fire perimeter (U.S. Forest Service 2012). Sixteen Protected Activity Centers (PACs) were affected by the fire, with 12 receiving a risk rating of high or very high. Fifty percent of the burned area is within designated critical habitat for the species. Treatments of seeding and mulching may mitigate permanent impairment of soils, increase grass and forb cover and rodent populations providing foraging opportunity for owls, as well as reduce significant impacts to 425 acres of riparian corridor on National Forest system lands.

Mexican spotted owls use forests ranging from deciduous riparian woodlands, to mixed conifer and spruce-fir (Fed. Register, 1993). They commonly use mixed-conifer and pine-oak community types in New Mexico, but do not appear to nest in the ponderosa pine community type. The importance of low and mid-elevation riparian woodlands to the owl for spotted owl home range and dispersal corridors is unknown (Fed. Register, 1993).

Though Bonito Lake is within designated critical habitat for the Mexican Spotted Owl, the designation only applies to situations where Federal funding, authorization or permits are involved. Since no private, state or tribal lands are being designated, the designation will only affect activities on Federal lands. The land around the lake is owned and managed by the City of Alamogordo, and does not provide essential critical habitat elements. No vegetation was removed and no construction occurred for placing the pumps adjacent to the dam.

There would be no effect to the Mexican Spotted Owl from the installation and operation of the pumps, or from the No Action Alternative.

3.11 Cultural Resources

On July 09, 2012, a Corps' archaeologist conducted a search of the New Mexico Historic Preservation Division (NMHPD), Archaeological Records Management Section's (ARMS) New Mexico Cultural Resource Information System (NMCRIS) database. The search found that no archaeological surveys have been conducted in the project area and no historic properties have previously been documented to occur within or immediately adjacent to the project area. The Area of Potential Effect (APE) includes the temporary access route taken along the eastern margin of the existing Bonito Lake shore and the City's staging area that was bladed to remove woody flood debris from the area in order to set up the portable pumps. During the NMCRIS database search, the Corps found that, should the dam fail, 22+ previously documented archaeological sites located downstream of the dam along the Rio Bonito, including the historic Fort Stanton Military Reservation, could be affected by flooding (Table 1). Fort Stanton, established in 1855 and located about 12 miles downstream from Bonito Lake, is listed on both the State Register of Cultural Properties (HPD No. 60; 1969) and the National Register of Historic Places (NR No. 73001142; 1973). Other notable downstream sites include the Crockett Canyon/Horned Toad Site, the Franklin/Surprise Site, and the Angus Site.

Bonito Dam itself is a historic structure from the early 1930s. In the early 1880s, prospectors were exploring the area and found silver ore (Allen and Kottlowski 1981:11-12; Julyan 1998:45). By 1882, a mining camp later known as Bonito City was founded. Bonito City was located in the immediate vicinity of today's Bonito Lake. The railroad companies were actively constructing track systems throughout southern and eastern New Mexico to serve the region's mines and to acquire timber and coal resources in the area. Their steam locomotives required a source of good fresh water (Myrick 1970:58-94); finding suitable water for the locomotive boilers was a significant problem in the region (Myrick 1970:88, 93; Cooper 1964:159). To solve the problem, a small surface water storage dam and an extensive wooden-ringed (redwood and/or pine) pipeline system were constructed to serve local communities and the railroad. This small dam, located on the South Fork of the Rio Bonito, and pipeline system were originally

constructed in 1907 and 1908 by the El Paso and Northeastern Railroad Co. (Cooper 1964:159-160). The EP&NE was subsequently acquired by the El Paso and Southwestern Railroad Co. and in 1924 EP&SW was bought by the Southern Pacific Railroad Co. (Myrick 1970:58-94; Cooper 1964:159-160). The pipeline system originally utilized the small natural basin called Nogal Lake as a temporary storage reservoir; however by the 1920s Nogal Lake did not have the capacity required by the railroad and was having leakage problems (Cooper 1964:159-160). Between 1930 and 1931, the Southern Pacific constructed Bonito Dam (Cooper 1964:159-160). Construction of the rock dam, at the confluence of Bonito Creek and the South Fork of the Rio Bonito, required that the remnants of Bonito City be removed and the few remaining residents be relocated to a location about one-mile downstream (Cooper 1964:159-160; Bowser 1996). The 1950s brought in newer, more powerful diesel locomotives that did not require millions of gallons of water. "In 1955 the El Paso and Rock Island Railway Co. as owner, and the Southern Pacific Co. as lessee, made application to the State Engineer of New Mexico to make transfers of water rights from Bonito Lake" (Cooper 1964:160). The Bonito Lake water rights went to the City of Alamogordo and to what became Holloman Air Force Base (Cooper 1964:159-160). In 1957, the old wooden-ring pipeline was replaced with about 80 miles of steel pipe (Cooper 1964:159-160; Ulvog et al. 1964:24; Mourant 1964:20). Myrick (1970:93) makes a note that a primary reference (unavailable for this report) on the Bonito pipeline system is Dorothy Jensen Neal's 1961 book entitled *Captive Mountain Waters: A Story of Pipelines and People*.

On July 30, 2012, a Corps archaeologist conducted an archaeological survey of the disturbed project area (Figures 3 and 4). The intensive pedestrian survey was conducted by walking linear transects spaced no more that 10 meters apart. No artifacts, cultural features, or historic properties were observed during the Corps survey. The survey covered 100 percent of the project area APE; a total of approximately 2.0 acres. The area has been heavily used for recreational activities, primarily for access to the lake shore for fishing. The project area is located immediately downhill from the Bonito Lake access road. The project area has been heavily disturbed by several past construction projects (Figures 5-10), most notably, the original construction and subsequent maintenance of the access road, now paved, to Bonito Lake that includes construction of bank stabilization structures downhill from the road (uphill from the APE) and the installation of water drainage culverts that drain water from the road surface down to the lake shore. Other construction projects include walkway and stair structures to provide public recreational access to the lake shoreline. In addition, the shoreline area has been disturbed by nearly a century of wave action from the lake. Generally, the hillside is steep and would have been unsuitable for prehistoric or historic occupation. The Corps negative archaeological survey report entitled *A Cultural Resources Inventory of 2.0 Acres for Emergency Pumping Activities Associated with the Little Bear Wildfire, Bonito Lake, Lincoln County, New Mexico* (Report No. USACE-ABQ-2012-007, NMCRIS No. 125052) was submitted to the New Mexico State Historic Preservation Officer on August 22, 2012. Based on the negative archaeological survey and the prior disturbed nature of the area, the Corps is of the opinion that the use of the access route and pumping/staging area resulted in "No Historic Properties Affected."

Consistent with the Department of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and based on the State of New

Mexico Indian Affairs Department and Historic Preservation Division's 2012 Native American Consultations List, government to government tribal scoping letters describing the facets of the project and inviting consultation were sent to the Native American Tribes/Pueblos on record as having concerns in Lincoln County on August 16, 2012. The five tribes include the Pueblos of Isleta and Ysleta del Sur, and the Comanche Indian Tribe, Kiowa Tribe, and the Mescalero Apache Tribe. To date, the USACE has received no tribal concerns regarding the proposed project. No traditional cultural properties and no Indian Trust Assets are known to occur within or adjacent to the project area.

Should additional Corps/Federal assistance be requested regarding the results of the Little Bear Wildfire and the potential for flood risk that may require additional ground disturbing activities, pursuant to 36 C.F.R. 800.13, should previously unknown artifacts, cultural features, or historic properties be encountered during construction, work would cease in the immediate vicinity of the discovery. A determination of significance would be made, and consultation with the State Historic Preservation Officer and Native American tribes that have concerns in the area would be conducted to determine the best course of action.

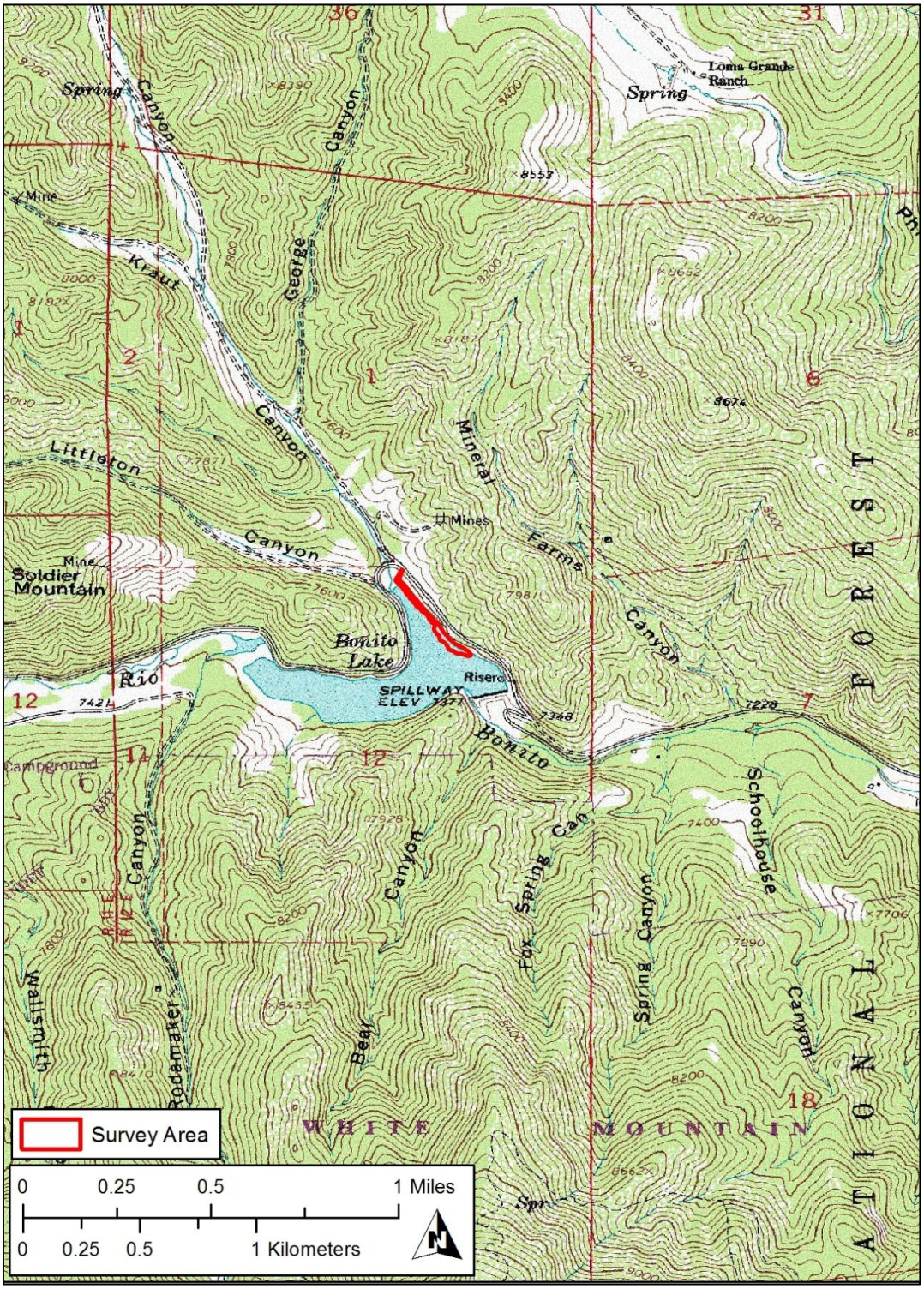

Figure 3. Archaeological Survey Area within the NE 1/4, Section 12, Township 10 South, Range 12 East. Adapted from USGS 7.5-Minute Quadrangle Map: Angus, NM (33105-d6; 1963, Revised 1982).

Figure 4. Archaeological Survey Area within the NE 1/4, Section 12, Township 10 South, Range 12 East. Adapted from 2005 NAIF aerial Imagery.

Table 1. Little Bear Wildfire: Archaeological sites downstream of Bonito Lake.

***Specific site location data removed.**		**Archaeo site LA No. and/or Name**	**Brief Description**	**Eligibility Determin-ation made? If Yes, Criteria.**	**Eligible for listing on National Register?**
		87933 Bonito	Bonito, Hist. community; mine shaft	N	Y
		54194	Hist. house foundation	N	Y
		54201	Unk. Hist. – 1 burial	N	Y
		54195	Prehist. roomblock (2)	N	Y
		113055	Prehist. Petroglyphs; 750-1400AD	Y; d	Y
		2315 Crockett Canyon / Horned Toad Site	Prehist: Jornada Mogollon pithouses w/burials 1100-1300 AD Hist. US. Territorial 1846-1912	N	Y
		18436 Franklin / Surprise Site	Prehist: Jornada Mogollon, early Pueblo/Glencoe 1100-1400 AD Pithouse(s?), hearths (2)	N	Y
		13088	Unk. Prehist. Unk. Hist. 1 burial	N	Y
		3334 Angus Site	Prehist: Jornada Mogollon, early Pueblo/Glencoe 1100-1400 AD Pithouses (5), 1 kiva, midden, 1000s artifacts; Prehist. Apache	Y; d	Y
		20294	Unk. Prehist.	N	Y
		20300	Unk. Prehist.	N	Y
		68785	Prehist. Unk. Mogollon 1100-1400 AD mound, possible str.	N	Y
		68786	Prehist. Unk. Mogollon 1100-1400 AD	N	Y
		68787	Unk. Prehist.	N	Y
		68795	Unk. Prehist.	N	Y
		68789	Unk. Prehist.	N	Y

		68790	Unk. Prehist.	N	Y
		68794	Unk. Prehist.	N	Y
		68799			
		60908			
		20302	Hist. adobe, 2-story structure, reported = saloon US Territorial	N	Y
		8744 Fort Stanton	Est. 1855; State Register No. 60 (1969) National Register No. 73001142 (1973)	Y; a, b, c, & d	Y

* **Specific archaeological site location data is For Official Use Only - Public Disclosure of Archaeological Site Locations is Prohibited by 16 U.S.C. 470hh (36 CFR 296.18).**

Figure 5. Access point of entry from the paved Bonito Lake road. Photograph No. 4642; 7-30-2012.

Figure 6. Access route along the east shore of Bonito Lake showing rock-filled gabion baskets for shoreline bank protection, railroad-ties for hill slope protective works, and two roadside rainwater drainage culverts, upper right. View approximately to NW. Photograph No. 4649; 7-30-2012.

Figure 7. Photograph showing railroad-ties for hill slope stabilization, rock-filled gabion baskets for roadside rainwater drainage, and hand-railing for public access to the Bonito Lake shoreline. View approximately to N. Photograph No. 4631; 7-30-2012.

Figure 8. Photograph showing effects of wave action erosion and railroad-tie bank stabilization with hand-railing for public access to the Bonito Lake shoreline. View approximately to NW. Photograph No. 4634; 7-30-2012.

Figure 9. Photograph showing the staging area where fire debris has been cleared and lake side portable pumps have significantly lowered the lake. As lake levels are lowered, the pumps are moved lower. View approximately to S. Photograph No. 4636; 7-30-2012.

Figure 10. Photograph showing the piping from the pumps that carry water to the Bonito Lake road surface to be delivered downstream. Backhoe in the background is installing a pump closer to the lakeshore. View approximately to SE. Photograph No. 4621; 7-30-2012.

3.12 Socioeconomic Considerations, Land Use and Recreation

Bonito Lake is located in rural Lincoln County approximately 10 miles north of Ruidoso.

3.12.1 **Socioeconomics**

The median household and per capita incomes for Lincoln County reflect the values for the state of New Mexico. The population does not reflect the diversity of the rest of the state with predominantly Caucasians (65%) and Hispanics (30.7%). Under the No Action Alternative, lake recreation would likely be curtailed, resulting in indefinite economic losses. Operation of the bypass pumps under the Action Alternative would not curtail recreation, and may reduce damage to local infrastructure from sediment and debris.

3.12.2 **Land Use**

Bonito Lake is surrounded by the Lincoln National Forest. The primary land use around the lake is recreation (camping, hiking, and fishing), while the lake itself provided the water supply for Alamogordo, Carrizozo, Captain, Nogal and Holloman AFB. Under the No Action Alternative, recreation and other land use at the site would be impacted by sediment and debris. Operation of

the bypass pumps under the Action Alternative supports efforts to reduce damage to local infrastructure from sediment and debris.

3.12.3 **Recreation**

Public recreation facilities have been developed at two primary areas at Bonito Lake. Bonito Lake supported a rainbow trout (*Oncorhychus mykiss)* fishery (coldwater) along with several campgrounds and hiking trails around the lake. The highest visitation at the lake occurs during the months of April through September. Overall, there is sustained public use of the area throughout the year. Public access to Bonito Lake and associate recreation has been curtailed due to the increased potential for flooding after the fire. Under the No Action Alternative, lake recreation would likely be curtailed, resulting in indefinite economic losses. Operation of the bypass pumps under the Action Alternative would not curtail recreation at or around the lake, and may reduce damage to local infrastructure from sediment and debris.

3.13 Environmental Justice

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994) was designed to focus the attention of federal agencies on the human health and environmental conditions of minority and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations and proposed actions. The 1995 EPA guidance document, *Environmental Justice Strategy: Executive Order 12898*, defines the approaches by which the EPA will ensure that disproportionately high environmental and/or socioeconomic effects on minority and low-income communities are identified and addressed. Further, it establishes agency wide goals for all Native Americans with regard to Environmental Justice issues and concerns.

The installation and proposed operation of the bypass pumps would affect downstream residents and other affected parties equally. Neither bypass pumps nor the No Action Alternative would have a disproportionate effect on minority and low-income communities. Under the No Action Alternative, there would be a higher potential for flooding and debris flows downstream of the lake.

3.14 Indian Trust Assets

Indian Trust Assets (ITAs) are a legal interest in assets held in trust by the United States Government for Indian tribes or individuals. The United States has an Indian Trust Responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statues, executive orders, and rights further interpreted by the courts. The Secretary of the Department of the Interior (DOI), acting as the trustee, holds many assets in trust. Some examples of ITAs are lands, minerals, water rights, hunting and fishing rights, titles and money. ITAs cannot be sold, leased, or alienated without the express approval of the United States Government. The Indian Trust Responsibility requires that all Federal agencies take all actions reasonably necessary to protect such trust assets. The Department of Defense's

American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and DOI's Secretarial Order 3175 and the Bureau of Reclamation's (Reclamation) ITA Policy require that the Corps, as the project's Lead Federal Agency, and Reclamation, as the Federal Land Managing Agency, consult with tribes and assess the impacts of its projects on ITAs. If any ITAs are identified and are to be impacted, further consultation on measures to avoid or minimize potential adverse effects will take place. If the project results in adverse impacts, consultation regarding mitigation and/or compensation will take place.

Consistent with the Department of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and based on the State of New Mexico Indian Affairs Department and Historic Preservation Division's 2012 Native American Consultations List, government to government tribal scoping letters describing the facets of the project and inviting consultation were sent to the Native American Tribes/Pueblos on record as having concerns in Lincoln County on August 16, 2012. The five tribes include the Pueblos of Isleta and Ysleta del Sur, and the Comanche Indian Tribe, Kiowa Tribe, and the Mescalero Apache Tribe. To date, the USACE has received no tribal concerns regarding the proposed project. No Indian Trust Assets are known to occur within or adjacent to the project area.

3.15 Human Health and Safety

Debris flows have a potentially serious impact on human health and safety. Ensuring the safety of residents downstream of Bonito Lake by preventing debris build-up in the lake, preventing flooding, and maintaining integrity of the dam is a primary purpose of the bypass pumps. The bypass pumps would benefit public safety, whereas the No Action Alternative would result in the accumulation of potentially hazardous debris in Bonito Lake.

3.16 Hazardous, Toxic, and Radioactive Waste (HTRW)

There are no hazardous, toxic, or radioactive waste impacts from this project. Almost all debris washed downstream into the project area following the Little Bear Fire has been sediment and woody debris. Any trash or other man-made debris that is removed from the boom or the lake would be disposed of properly in an off-site facility. Operation of the bypass pumps would support removal of hazardous materials from the lake, whereas the No Action Alternative would result in the accumulation of potentially hazardous debris in Bonito Lake.

3.17 Cumulative Impacts

NEPA defines cumulative effects as "…the impact on the environment which results from the incremental impact of the action when added to other, past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

The proposed action lies within a rural area in Lincoln County (Figure 2). The pumps would not significantly impact the current conditions of the local environment and would benefit lake recreation and human safety. For these reasons, the proposed project when combined with past,

present, or future activities in the Bonito Lake area would not significantly add to or raise local cumulative adverse environmental impacts to a level of significance.

4 CONCLUSIONS AND SUMMARY

This Environmental Assessment addresses the potential effects of the installation and emergency operation of two bypass pumps at Bonito Lake, Lincoln County, New Mexico for seven days immediately following the Little Bear Fire. The installation and temporary operation of the two bypass pumps provided the City of Alamogordo sufficient time to organize their flood fighting after the lake filled with debris and sediment following a localized rainstorm.

Table 2. Summary of Effects of Proposed Action and No Action Alternative

Resource	Proposed Action		No Action Alternative	
	Short-term effect	**Long-term effect**	**Short-term effect**	**Long-term effect**
Physiography, Geology, and Soils	No effect	No effect	No effect	No effect
Climate and Climate Change	No effect	No effect	No effect	No effect
Floodplains and Wetlands	No effect	No effect	No effect	No effect
Water Resources	No effect	No effect	Adverse effect	Adverse effect
Hydrology and Water Quality			Adverse effect	Adverse effect
Air Quality and Noise	Minor adverse effect	No effect	No effect	No effect
Aesthetics	Adverse effect		Adverse effect	Adverse effect
Vegetation Communities	No effect	No effect	No effect	No effect
Noxious Weeds and Invasive Species	No effect	No effect	No effect	No effect
Wildlife	No effect	No effect	No effect	No effect
Special Status Species	No effect	No effect	No effect	No effect
Cultural Resources	No effect	No effect	No effect	No effect
Socioeconomic Considerations and Land Use	No effect	No effect	No effect	No effect
Recreation	Beneficial effect	No effect	Adverse effect	Adverse effect
Environmental Justice	No effect	No effect	No effect	No effect
Indian Trust Assets	No effect	No effect	No effect	No effect
Human Health and Safety	Beneficial effect	No effect	Adverse effect	Adverse effect
Hazardous, Toxic, and Radioactive Waste	No effect	No effect	Adverse effect	Adverse effect

5 PREPARATION, CONSULTATION AND COORDINATION

5.1 Preparation

This Environmental Assessment was prepared by the U.S. Army Corps of Engineers, Albuquerque District. Personnel primarily responsible for preparation include:

- Michael D. Porter, Fishery Biologist
- Gregory D. Everhart. Archaeologist

5.2 Quality Control

This EA has been reviewed for quality control purposes. Reviewers include:

- Julie A. Alcon, Chief, Environmental Resources Section
- Ondrea Hummel, Ecologist
- Jeremy Decker, Archaeologist
- Ariane Pinson, Technical Writer/Editor

5.3 Consultation and Coordination

Agencies and entities that were consulted in preparation of this Environmental Assessment include:

- The City of Alamogordo, New Mexico
- The U.S. Forest Service

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107 Kansas City Road
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Appendix A

Lincoln County Wildlife Species of Concern

Biota Information System Of New Mexico

Providing New Mexico and its wildlife Year-round Excellent Service

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Report County Federal/State Species Status for

Lincoln

39 species returned.

Taxonomic Group	# Species	Taxonomic Group	# Species
Fish	2	Mammals	20
Amphibians	1	Molluscs	1
Birds	15		

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Common Name	Scientific Name	Habitat Map	Species Photo (click photo to enlarge)	Status
Chub, Rio Grande	Gila pandora			State NM: Sensitive taxa (informal)
Pupfish, White Sands	Cyprinodon tularosa		no photo	Federal: FWS Species of Concern State NM: Threatened
Salamander, Sacramento Mtn.	Aneides hardii	no map		Federal: FWS Species of Concern State NM: Threatened
Black-Hawk, Common	Buteogallus anthracinus anthracinus (NM)	no map		Federal: FWS Species of Concern State NM: Threatened
Cuckoo, Yellow-billed	Coccyzus americanus occidentalis (eastern pop)	no map	no photo	Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Eagle, Bald	Haliaeetus leucocephalus alascanus (NM)	no map		State NM: Threatened
Falcon, Peregrine	Falco peregrinus anatum	no map		Federal: FWS Species of Concern State NM: Threatened
				Federal: FWS

Falcon, Peregrine, Arctic	Falco peregrinus tundrius	no map	no photo	Species of Concern State NM: Threatened
Flycatcher, Willow, SW.	Empidonax traillii extimus	no map		Federal: Critical Hab. Designated (NM) Federal: Endangered State NM: Endangered
Goshawk, Northern	Accipiter gentilis atricapillus (NM,AZ);apache (NM,AZ)	no map	no photo	Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Hummingbird, Broad-billed	Cynanthus latirostris magicus (NM)	no map		State NM: Threatened
Owl, Burrowing	Athene cunicularia hypugaea (NM,AZ)	no map		Federal: FWS Species of Concern
Owl, Spotted, Mexican	Strix occidentalis lucida (NM,AZ)	no map		Federal: Critical Hab. Designated (NM) Federal: Threatened State NM: Sensitive taxa (informal)
Pelican, Brown	Pelecanus occidentalis carolinensis (NM)	no map		State NM: Endangered
Plover, Mountain	Charadrius montanus		no photo	State NM: Sensitive taxa (informal)
Shrike, Loggerhead	Lanius ludovicianus excubitorides (NM);sonoriensis (NM);gambeli (NM)	no map		State NM: Sensitive taxa (informal)
Sparrow, Baird's	Ammodramus bairdii	no map		Federal: FWS Species of Concern State NM: Threatened
Vireo, Gray	Vireo vicinior			State NM: Threatened
Bat, Big-eared, Townsend's, Pale	Corynorhinus townsendii pallescens (NM,AZ)	no map	no photo	Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Bat, Myotis, Brn., Little, Occult	Myotis lucifugus occultus (NM,AZ)	no map	no photo	State NM: Sensitive taxa (informal)
Bat, Myotis, Cave	Myotis velifer incautus (NM);brevis (NM,AZ)	no map	no photo	State NM: Sensitive taxa (informal)

Bat, Myotis, Fringed	Myotis thysanodes thysanodes (NM,AZ)	no map	no photo	State NM: Sensitive taxa (informal)
Bat, Myotis, Long-legged	Myotis volans interior (NM,AZ)	no map	no photo	State NM: Sensitive taxa (informal)
Bat, Myotis, Small-footed, W.	Myotis ciliolabrum melanorhinus (NM,AZ)	no map		State NM: Sensitive taxa (informal)
Bat, Myotis, Yuma	Myotis yumanensis yumanensis (NM,AZ)	no map		State NM: Sensitive taxa (informal)
Chipmunk, Colorado, Oscura Mtns.	Neotamias quadrivittatus oscuraensis (NM)	no map	no photo	State NM: Threatened
Chipmunk, Gray-footed	Neotamias canipes sacramentoensis (NM)	no map	no photo	State NM: Sensitive taxa (informal)
Chipmunk, Least, Penasco	Neotamias minimus atristriatus (NM)	no map	no photo	Federal: FWS Species of Concern State NM: Endangered
Prairie Dog, Black-tailed	Cynomys ludovicianus ludovicianus (NM)	no map		Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Prairie Dog, Black-tailed, AZ	Cynomys ludovicianus arizonensis (NM,AZ)	no map	no photo	Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Fox, Red	Vulpes vulpes fulva (NM);macroura (NM)	no map		State NM: Sensitive taxa (informal)
Gopher, Pocket, Desert	Geomys arenarius brevirostris (NM)	no map	no photo	Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Mouse, Pocket, Rock	Chaetodipus intermedius ater (NM)	no map	no photo	State NM: Sensitive taxa (informal)
Muskrat, Pecos River	Ondatra zibethicus ripensis (NM)	no map	no photo	Federal: FWS Species of Concern State NM: Sensitive taxa (informal)
Ringtail	Bassariscus astutus arizonensis (NM,AZ);flavus (NM);yumanensis (AZ);nevadensis (AZ)	no map		State NM: Sensitive taxa (informal)
Skunk, Hog-nosed, Common	Conepatus leuconotus mearnsi (NM);venaticus (NM,AZ)	no map	no photo	State NM: Sensitive taxa (informal)
Skunk, Spotted, Western	Spilogale gracilis	no map	no photo	State NM: Sensitive taxa (informal)
Squirrel, Red	Tamiasciurus hudsonicus lychnuchus (NM)	no map	no photo	State NM: Sensitive taxa (informal)

Mountainsnail, Socorro	Oreohelix neomexicana	no map	no photo	State NM: Sensitive taxa (informal)

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Listed and Sensitive Species in Lincoln County

Total number of species: 27

Print

Common Name	Scientific Name	Group	Status
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis*	Fish	Candidate
New Mexican meadow jumping mouse	*Zapus hudsonius luteus*	Mammal	Candidate
Northern aplomado falcon	*Falco femoralis septentrionalis*	Bird	Endangered
Black-footed ferret [2]	*Mustela nigripes*	Mammal	Endangered
Kuenzler's hedgehog cactus	*Echinocereus fendleri var. kuenzleri Escobaria (=Coryphantha)*	Plant	Endangered
Whooping Crane	*Grus americana*	Bird	Experimental, Non-essential Population
Mexican spotted owl Designated Critical Habitat	*Strix occidentalis lucida*	Bird	Threatened
White Sands pupfish	*Cyprinodon tularosa*	Fish	Under Review

Species of Concern

Species of Concern are included for planning purposes only.

Common Name	Scientific Name	Group	Status
Sacramento mountain salamander	*Aneides hardii*	Amphibian	Species of Concern
Bonita diving beetle	*Deronectes neomexicana*	Arthropod - Invertebrate	Species of Concern
Desert viceroy butterfly	*Limenitis archippus obsoleta*	Arthropod - Invertebrate	Species of Concern
Sacramento Mountains blue butterfly	*Icaricia icariodes*	Arthropod - Invertebrate	Species of Concern
Sacramento Mountains silverspot butterfly	*Speyeria atlantis capitanensis*	Arthropod - Invertebrate	Species of Concern
American peregrine falcon	*Falco peregrinus anatum*	Bird	Species of Concern

Arctic peregrine falcon	*Falco peregrinus tundrius*	Bird	Species of Concern
Baird's sparrow	*Ammodramus bairdii*	Bird	Species of Concern
Common black hawk	*Buteogallus anthracinus*	Bird	Species of Concern
Northern goshawk	*Accipiter gentilis*	Bird	Species of Concern
Western burrowing owl	*Athene cunicularia hypugaea*	Bird	Species of Concern
Yellow-billed cuckoo	*Coccyzus americanus*	Bird	Species of Concern
Rio Grande sucker	*Catostomus plebeius*	Fish	Species of Concern
Black-tailed prairie dog	*Cynomys ludovicianus*	Mammal	Species of Concern
Organ Mountains Colorado chipmunk	*Eutamias quadrivittatus australis*	Mammal	Species of Concern
Pecos River muskrat	*Ondatra zibethicus ripensis*	Mammal	Species of Concern
Penasco (Least) chipmunk	*Tamias minimus atristriatus*	Mammal	Species of Concern
Townsend's big-eared bat	*Corynorhinus townsendii*	Mammal	Species of Concern
Sierra Blanca cliff daisy	*Chaetopappa elegans*	Plant	Species of Concern

Endangered	Any species which is in danger of extinction throughout all or a significant portion of its range.	**Threatened**	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Candidate	Candidate Species (taxa for which the Service has sufficient information to propose that they be added to list of endangered and threatened species, but the listing action has been precluded by other higher priority listing activities).	**Proposed**	Any species of fish, wildlife or plant that is proposed in the Federal Register to be listed under section 4 of the Act. This could be either proposed for endangered or threatened status.
Experimental, Non-essential Population	A reintroduced population established outside the species' current range, but within its historical range. For purposes of section 7 consultation, this population is treated as a proposed species, except when it is located within a National Wildlife Refuge and National Park, when the population is considered threatened.		
Under Review	Determining whether the status of the species meets the definition of threatened or endangered.		
Species of Concern	Taxa for which further biological research and field study are needed to resolve their conservation status OR are considered sensitive, rare, or declining on lists maintained by Natural Heritage Programs, State wildlife agencies, other Federal agencies, or professional/academic scientific societies. Species of Concern are included for planning purposes only.		

Foot Notes:

D Designated Critical Habitat.

P Proposed Critical Habitat.

1 Introduced population.

2 Survey should be conducted if project involves impacts to prairie dog towns or complexes of 200-acres or more for the Gunnison's prairie dog (*Cynomys gunnisoni*) and/or 80-acres or more for any subspecies of Black-tailed prairie dog (*Cynomys ludovicianus*). A complex consists of two or more neighboring prairie dog towns within 4.3 miles (7 kilometers) of each other.

3 Extirpated in this county.

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Species Considered, but dropped

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Results of County Search

LINCOLN	
Scientific name	County-NM
Astragalus kerrii	Lincoln
Astragalus neomexicanus	Chaves, Lincoln, Otero
Cirsium inornatum	Lincoln, Otero
Crataegus wootoniana	Catron, Grant, Lincoln
Delphinium novomexicanum	Lincoln, Otero
Echinocereus fendleri var. kuenzleri	Chaves, Eddy, Lincoln, Otero
Erigeron rybius	Lincoln, Otero
Eriogonum wootonii	Lincoln, Otero
Geranium dodecatheoides	Lincoln
Hedeoma pulcherrima	Lincoln, Otero
Heuchera woodsiaphila	Lincoln
Heuchera wootonii	Catron, Lincoln, Otero
Hymenoxys brachyactis	Lincoln, Socorro, Torrance
Ionactis elegans	Lincoln
Lupinus sierrae-blancae	Lincoln, Otero
Penstemon alamosensis	Doña Ana, Lincoln, Otero
Penstemon cardinalis ssp. cardinalis	Lincoln, Otero
Penstemon neomexicanus	Lincoln, Otero
Philadelphus microphyllus var. argyrocalyx	Lincoln, Otero
Physaria aurea	Lincoln, Otero
Physaria lata	Lincoln
Potentilla sierrae-blancae	Lincoln, Otero
Ribes mescalerium	Lincoln, Otero
Sedum integrifolium ssp. neomexicanum	Lincoln, Otero
Senecio sacramentanus	Lincoln, Otero
Synthyris oblongifolia	Lincoln, Otero

Valeriana texana	Eddy, Lincoln, Otero

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