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Sevier Lake Competitive Potash Leasing Proposal

Location: Millard County, Utah

Applicant/Address: Bureau of Land Management, Utah State Office

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Sevier Lake Competitive Potash Leasing Proposal

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1.0 PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the Sevier Lake Competitive Potash Leasing Proposal by the Bureau of Land Management (BLM). No specific plans are provided for development of potash leases at this time; the EA has been developed based upon suggested reasonable scenarios for extraction of potash based upon known available processes and technology.

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, which can be either the proposed action or another alternative. A DR, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects).

1.2 Background

The BLM proposes to offer the dry lakebed of Sevier Lake, in Millard County, Utah for competitive potash leasing. The leasing proposal is in response to Expressions of Interest submitted to the BLM in 2008 and 2009. Sevier Lake is a large terminal playa which is normally dry, and has been shown to contain potassium-bearing saline brines. The brine resource along with the meteorological and topographic conditions found at Sevier Lake, make the site a viable location from which to produce potassium and associated minerals (BLM 1987). Potash is the name for a variety of mined and manufactured salts – all containing the element potassium in water-soluble form (USGS 2010). The potash resources within the Sevier Lake basin were initially developed by Crystal Peak Minerals Corporation (CPMC) in the late 1970’s through the early 1990s. The BLM issued Preference Right Leases for potassium on the entire lakebed after the company’s exploration efforts showed that sufficient resources were present to justify economic development (See **Section 3.2.1**). Preference right leases for potash can be obtained by a holder of prospecting permits who demonstrates discovery of a valuable deposit and in addition,

per 43 CFR 3507.11(b) BLM must determine that the lands are chiefly valuable for the subject minerals.

The lands currently under consideration for leasing comprise 125,762 acres in Townships 20, 21, 22, 23, & 24 South and Ranges 10, 11 & 12 West, Salt Lake Base and Meridian, in the sections listed below. The lease(s) would provide the lease holder(s) with exclusive rights to the mineral leased, but not to the land itself. It is expected that in order to develop the lease, dikes, ponds, associated access roads and other facilities would be constructed within the lease area, and on surrounding rights of way (ROWs), with the purpose of extracting potash. See attached location map (**Figure 1**). The BLM would grant the lease(s) in accordance with requirements found in the *Code of Federal Regulations* (CFR), Title 43, Part 3500, Subpart 3501.

A decision record on this competitive potash leasing EA would not authorize development. It would allow a competitive potassium lease sale to move forward through the publication of a lease sale notice. The acquisition of a potassium lease provides an exclusive right to the mineral; the extraction and development of that resource would only be allowed according to lease stipulations and under an approved mine plan, as well as other required state and federal approvals. An approved mine plan is a detailed plan as described in 43 CFR 3592.1 that, once completed, would be subject to NEPA compliance.

Legal Description: T. 20 S., R. 10 W., sections 7, 8, 17-20, 29-31;
T. 20 S., R. 11 W., sections: 3-36;
T. 20 S., R. 12 W., sections: 11, 12, 13-15, 22-28, 33-36;
T. 21 S., R. 11 W., sections: 1-12, 14-23, 26-30; 32-35;
T. 21 S., R. 12 W., sections: 1-4, 9-17, 20-29, 33-36;
T. 22 S., R. 11 W., sections: 3-10, 17- 21, 29, 30, 31;
T. 22 S., R. 12 W., sections: 1-4, 9-15, 21-29, 33-36;
T. 23 S., R. 11 W., sections: 6, 19, 30, 31;
T. 23 S., R. 12 W., sections: 1-5, 8-15, 17, 20-28, 33-35;
T. 24 S., R. 12 W., sections: 1, 3-5, 7-12, 14, 15, 17, 18;
Total acreage: 125,762 acres (based on the U.S. Cadastral survey)

1.3 Need for the Proposed Action

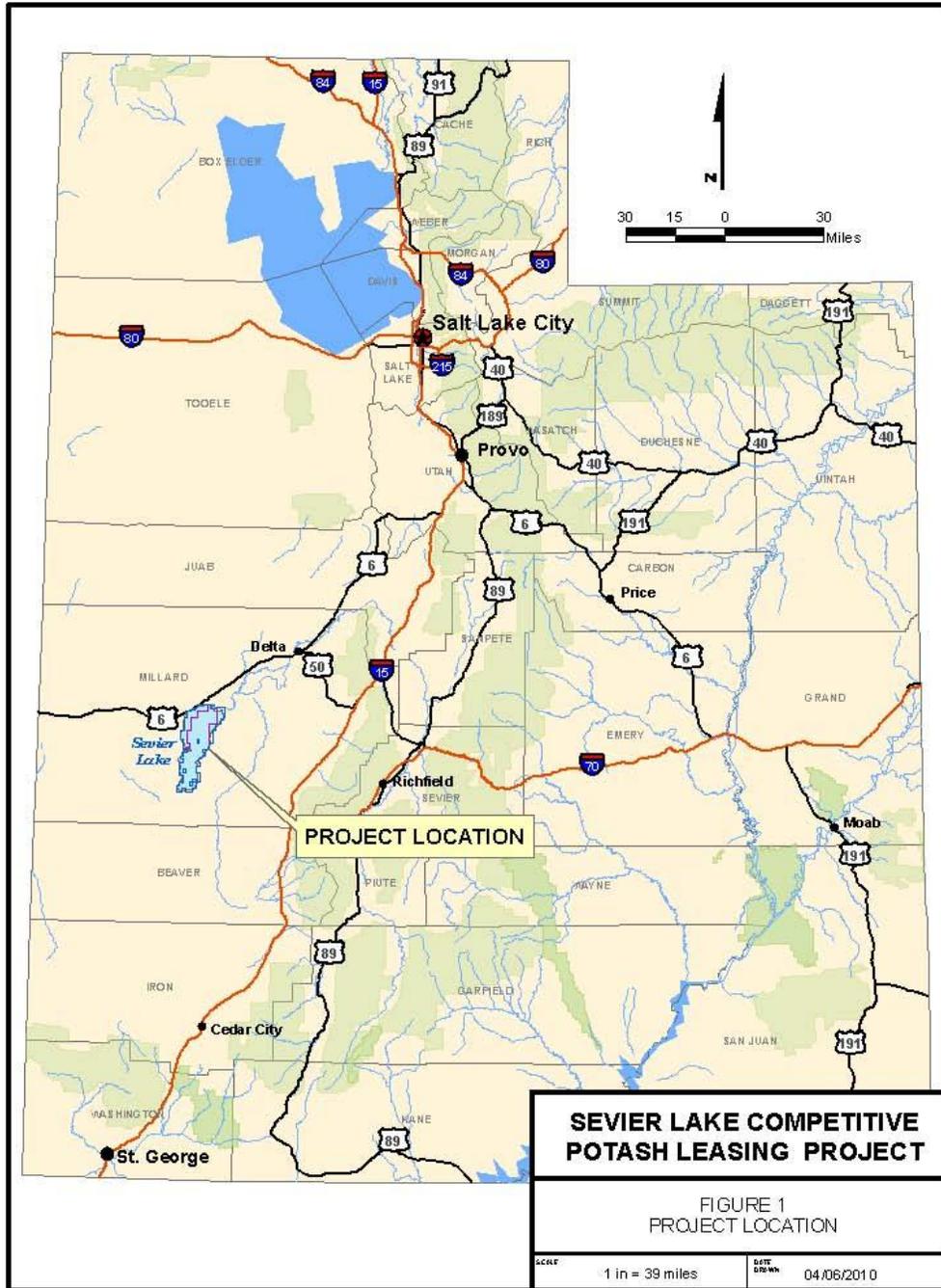
The BLM Utah State Office in Salt Lake City is the office responsible for receiving and processing applications for leasing and prospecting for solid leasable minerals in Utah, pursuant to the 43 CFR 3500 regulations. The Mineral Leasing Act of 1920 promotes the mining of potash on the public domain. In addition, the BLM is mandated to establish multiple uses of federal lands in providing for present and future generations. This action is consistent with Sec. 102(a)(912) of FLPMA (90 Stat.2744) which states that "... it is the policy of the United States that the public lands be managed in a manner which recognizes the nation's need for domestic sources of minerals...". The BLM's Fillmore Field Office (FFO) is responsible for management of the Sevier Lake playa for multiple uses, including minerals extraction.

Previous prospecting, exploration and development activities on the Sevier Lake playa have established the nature of this mineral resource. The BLM has responded to recent Expressions of Interest in leasing the Sevier Lake playa by initiating the steps required to offer such lands for competitive leasing. These steps include, but are not limited to: a determination that the lands are available for leasing; an official survey to BLM standards; and consideration of the comprehensive land use plan and any environmental concerns.

The proposal provides both economic and resource opportunities. There are no substitutes for potassium as an essential plant nutrient and an essential nutritional requirement for animals and humans (USGS 2010a). Potassium forms many important compounds. Potassium chloride (KCl) is the most common potassium compound; it is used for fertilizer, as a salt substitute, and to produce other chemicals. The major economic compound likely to be produced on the Sevier Lake leases would be a potassium sulfate (K_2SO_4) compound. Potassium sulfate is also called Sulfate of Potash (SOP). Chlorides of potassium are called Muriate of Potash or MOP. The SOP import market has gone up about 38% from 1995-2009. The SOP demands a premium price (30% higher than MOP) in the market place due to the low amount of world-wide production. Because demand is very high and the SOP products are not readily available, MOP is used. Because SOP has a lower salinity content it is more desirable especially for use in alkaline soils.

About 93 percent of the 2009 world potash production was consumed by the fertilizer industry (USGS 2010). The United States imports 80 percent of the potash fertilizer used on its farms. Most commercial fertilizers utilize potassium chloride. The potassium sulfate compound is desirable because some plants are chloride sensitive or respond better to sulfate than chloride. These include most fruits, vegetables, potatoes and many horticulture plants.

Figure 1 - Project Location



1.4 Purpose(s) of the Proposed Action

The purpose of this project is to provide the public an opportunity to competitively lease the potash resources in the Sevier Lake playa, with the outcome of providing local income and jobs, and adding to the global supply of potash. The purpose of the federal action is to allow the initial step towards economic recovery of potash resources from federal lands. Development of potassium sulfate from the Sevier Lake leases would provide a highly desirable and necessary potassium fertilizer (See Production Report, Appendix B). In contrast to the surface and subsurface brines of Sevier Lake, most of the potash reserves in Utah (in the Paradox Basin) lie at depths of more than 1,200 meters. The Sevier Lake competitive potash leasing proposal would have the potential to contribute to local, regional and state economies, and to supplement the global supply of potash. In order to implement its responsibilities pursuant to the Mineral Leasing Act of 1920, as amended, and to the regulations adopted at 43 CFR Part 3508, the BLM would publish a notice of lease sale. Subsequently, the BLM may award the competitive leases through sale.

1.5 Conformance with BLM Land Use Plan(s)

Although the Warm Springs Resource Area (WSRA) Resource Management Plan (RMP) (April 1987) does not specifically provide for leasing of the Sevier Lake bed, the proposed leasing action is in conformance with the RMP because it is clearly consistent with the objectives, terms, and decisions of the plan.

Under the WSRA RMP, the stated goals of the mineral program are to: 1) provide for discovery, development, and use of minerals on public land consistent with applicable laws and regulations; (2) require the least restrictive stipulations necessary to adequately protect other resources; and (3) continue to meet public demand for saleable and free-use mineral materials on a case-by-case basis. Although approval of the specific leasing action and development activities is not mentioned in the RMP, the RMP EIS describes then-ongoing exploration activities being conducted ‘under an approved exploration plan in connection with extended potassium prospecting permits in the Sevier Lake area’.

The leasing of the Sevier Lake bed is not precluded in the RMP. As discussed in detail in the following paragraph, areas closed to leasing are mapped in the RMP. The Sevier Lake bed is not specifically closed to leasing.

The RMP (page 49), Solid Non-Energy Leasable Minerals, states the following: “Prospecting permits will be processed and appropriate environmental protection stipulations attached. Leases will be issued and mining plans evaluated in order to define appropriate stipulations to protect other resource values. Restrictions on non-energy solid leasable mineral activity will be consistent with fluid mineral leasing category restrictions and areas withdrawn from locatable mineral entry as identified in Table 2-13 and the previous Locatable Minerals section (90,297 acres total).” Solid leasable minerals are

defined in 43 CFR 3501.5. This includes various salts of potassium (potash) and sodium. The RMP designates areas open to solid leasable mineral leasing. Sevier Dry Lake is designated as open. Table 2-13 of the RMP identifies 19 areas that were recognized during the RMP preparation as warranting more stringent environmental protections. The locatable minerals section identified 5 of those 19 areas as recommended for locatable mineral withdrawal. Map 8 in the RMP shows both sets of areas (warranting more stringent environmental protections and recommended for locatable mineral withdrawal). The rest of the resource area, including Sevier Lake, was found suitable for mineral extraction operations. In addition, other program areas within the RMP were reviewed and the proposed action is not in conflict with any decisions for other resources.

The RMP analysis was not anticipated to be full NEPA analysis of specific actions, therefore, this EA is being prepared as will future NEPA documents when specific mining plans are received and determined by the BLM to be complete. The proposed leasing action is consistent with activities previously analyzed and permitted within the FFO. See **Appendix C**, which describes previous NEPA-documented proposals for exploration and development of Sevier Lake.

1.6 Relationship to Statutes, Regulations, or other Plans

The Proposed Action and Alternatives are consistent with other plans, programs, and policies of affiliated Tribes, other federal agencies, state, and local governments to the extent practical, including but not limited to the following:

Federal Compliance:

- Federal Land Policy and Management Act (FLPMA) of 1976, as amended (43 U.S.c.1701 et seq.)
- Mineral Leasing Act of 1920
- Clean Air Act (42 U.S.C. 1857 et seq.), as amended and recodified (42 U.S.C. 7401 et seq.).
- Clean Water Act (33 U.S.C. 1251 et seq.)
- Rangeland Health Standards as developed by the Secretary of the Interior on February 22, 1995
- 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
- Migratory Bird Treaty Act (16 U.S.C. 703 et seq.)

- National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.)
- Protection of Historic Properties (36 CFR 800)
- Native American Graves Protection and Repatriation Act of 1990 and 43 CFR Part 10
- American Indian Religious Freedom Act of 1978
- Native American Trust Resource Policy standards are presented in the Department of the Interior Comprehensive Trust Management Plan dated March 28, 2003
- U.S. Fish and Wildlife Service Bald and Golden Eagle Protection Act, as amended

State of Utah and Local Compliance:

- Millard County General Plan
- State Engineer's Office
- Division of Oil, Gas and Mining
- Division of Air Quality

No specific State management plans apply to the Sevier Lake area. With this particular action (leasing), there would be few, if any, authorizations, permits, or other approvals needed. However, future development that would likely follow would potentially require such approvals as well as associated environmental review. **Table 1-1** identifies these, based upon a conceptual determination of realistically foreseeable development scenarios. The specific development plans proposed for lease development in the future, will dictate which of these approvals, or others, are required.

Sevier Lake Navigability Status

“The Federal courts have the final authority to determine navigability when Federal Interests are involved, such as upland with public domain land status, or interstate commerce. However, for management purposes, there are times when an administrative determination of navigability of a water body is needed to ascertain whether title to land remains in the United States...” (BLM 2009, p. 187).

“The Secretary of the Interior has both the authority and the duty to consider and determine what lands are public lands of the United States (see U.S.C. 2 and State of Montana, 11 IBLA 3 (1973)). Such authority and duty include an administrative determination of navigability of a river or lake to ascertain whether title to the land underlying the water body remains in the United States or whether title passed to a State upon its admission into the Union (Western Aggregates, L.L.C. 169 IBLA 64, 76 (2006): State of Montana, 88 IBLA 382, 384 (1985)) (BLM 2009) p. 191.

There are no Federal Court decisions that have declared Sevier Lake as a navigable water way. At the present time there have been sixteen areas that have been designated as “navigable” in the state of Utah. A review of the BLM record including the Survey Plats, Master Title Plats (MTPs) and the Historical Index (HI) for the townships involved containing the Sevier Lake Bed indicates that they have been designated as upland lands.

History supports that at one time Sevier Lake contained substantial amounts of water. In 1872 Hoxie reported that the lake was 28 miles long and was about 15 feet deep. It covered about 188 square miles (Gilbert 1890, p. 225). Johnson reported that in 1880 the lake was nearly dry and they could travel by foot across the lake bed and there was in some places 4-5 inches of salt (Gilbert 1890, p. 225). This could account for the differences in the original surveys in the 1800’s around the lake with some showing meanders and some not (BLM 2010). Without any determination from the Federal Courts, the surveys were protracted in the 1950’s and thus the BLM designated them as upland lands.

Table 1-1 Potential Authorizations, Permits, Reviews, and Approvals

Action Requiring Permit, Approval or Review	Permit/Approval	Agency Authority	Statutory Reference
Federal			
Official survey	Review and approval	BLM, Utah State Cadastral Survey	43 CFR 3503.33
NEPA compliance to offer Solid Mineral BLM leases		BLM	40 CFR 1500-1508
Competitive Potassium Leases		BLM	43 CFR 3508
Dike construction and construction of ponds	Permit to dredge or fill in waters of the U.S. or wetlands	US Army Corps of Engineers	33 CFR 323
Off-lease activity	Rights of Way	BLM	43 CFR 2800
Mining Operations Plan	Review plan for dike construction, plant siting, water usage, water wells, ponds, facility operation, and reclamation; once plan information is complete, conduct NEPA analysis.	BLM	43 CFR 3592
State of Utah			
Dike construction	Water impoundment permit; water right	State Engineer’s Office	UAC R655.11

Action Requiring Permit, Approval or Review	Permit/Approval	Agency Authority	Statutory Reference
	approval		
Water usage/well drilling	Water right approval; approval to install wells	State Engineer's Office	UAC R655.4, Title 73, Chapter 3
Plant site/ponds	Groundwater discharge permit	State Division of Water Quality	UAC R317-6
Stormwater management	Utah Pollutant Discharge Elimination System; storm water permits for construction activities and operational activities	State Division of Water Quality	UAC Title R317-8
Mining and Reclamation activities	Notice of Intent to Conduct Large (over 5 acres) Mining Operations	State Division of Oil, Gas and Mining	UAC Title R647-4
Facility operation	Air quality approval order (AO)	State Division of Air Quality	UAC Title R307
Materials movement; surface disturbance	Fugitive Dust Control Plan	State Division of Air Quality	UAC Title R307-309
Local or Other			
Facility construction	Construction permit	Millard County	Millard County General Plan
ROWs	Conditional Use Permit	Millard County	Millard County Zoning Ordinance
Federal lands - proposed actions in Millard County	Review	Millard County	Millard County General Plan

1.7 Identification of Issues

The leasing project was posted on the BLM's Environmental Notification Bulletin Board (ENBB) January 22, 2010. One public scoping comment was received by the BLM as a result of this posting; the comment was a request by the Southern Utah Wilderness Alliance (SUWA) for a copy of the EA. In addition, a representative of SUWA met with the BLM State office in June 2010 to express concerns over indirect effects to areas with wilderness characteristics. Also, Great Basin National Park Natural Resource Program Manager Ben Roberts has verbally expressed a concern about fugitive dust that may be seen by visitors to the park. No other public comments were received by the BLM as a result of the ENBB posting. Introductory meetings were held at the BLM FFO and at the BLM State Office in December 2009 and January 2010. A meeting to review resource issues and concerns was held at the BLM FFO February 3, 2010.

Consultation and coordination is summarized in Chapter 5. The Interdisciplinary (ID) Team resource checklist was completed, and is provided in **Appendix A**. Several resources and issues including supplemental authorities were dismissed from further analysis in this EA for the reasons provided in the checklist.

The relevant issues are identified through the scoping process. In this case, most of the relevant issues would not result from the lease action itself, but from the development that would likely follow. Issues have been identified based upon a conceptual determination of realistically foreseeable development scenarios. These issues are essentially effects on particular resource components. Those issues which cannot be dismissed and must be carried forward through analysis in this EA include the following:

Air Quality

- Under the reasonable development scenario, ground disturbing activities on and off lease have the potential to create fugitive dust. Any approved actions would require a dust control plan. Sevier Dry Lake constitutes a large source of dust during high wind events. Flooding of the lake surface would reduce the amount of dust that the area witnesses during these wind events. However, if farmland was to be taken out of production due to diversion of irrigation water, there could be increased dust from these areas.
- A concern regarding the visibility of fugitive dust from the project to visitors of Great Basin National Park was expressed by Ben Roberts, Great Basin National Park Natural Resource Program Manager. Fugitive dust is not expected to rise to an elevation that would make it visible from Great Basin National Park. Dust control measures will be implemented as described in **Section 2.2.2**.
- Millard County is currently an attainment area for NAAQS. The Intermountain Power Project (IPP) is the predominant point source for non-particulate criteria pollutants. Criteria pollutants emitted by development activities would negligibly add to those emitted by IPP, and the operation would likely not need a Prevention of Significant Deterioration (PSD) permit. Nor are there any Class I areas likely to be affected by the proposal.

Cultural Resources

- There may be National Register of Historic Places (NRHP)-eligible sites within the lease boundaries that could be impacted by future development. Results from the Class I file search indicate there have been 17 previous cultural resource inventories within a one-mile perimeter of the proposed potash leasing area. Twenty-five previously recorded archaeological sites are present in the study area (within 1 mile of the proposed potash leasing area). All of these sites are located along the northeastern margins of Sevier Lake near the mouth of the Sevier River; 15 of these sites are located within the boundary of the Sevier Lake potash leasing area, 10 are located on lands outside the leasing area. A total of nine sites are

unevaluated for the NRHP, four are NRHP-eligible, and two of these sites have been recommended ineligible for the NRHP.

- By adding the cultural stipulation (**Section 2.2.2**), the proposed lease offering will have No Adverse Effect to Historic Properties. SHPO concurred with this determination on May 12, 2010.

Floodplains

- Surface water and/or groundwater levels could be directly or indirectly affected during flood events.
- Subsurface water levels around Sevier Lake could be affected.
- All of Sevier Lake up to the 100-year flood mark can be classified as floodplain as defined in Executive Order 11988 on Floodplains. For details, see the Technical Report, Floodplains and Hydrology, **Appendix B**.

Livestock Grazing

- Cattle and sheep grazing occur on lands surrounding Sevier Lake; the lakebed itself is not managed for grazing due to lack of forage. The Sevier Lake potash leasing areas include about 8,000 acres in the corners of several allotments. These areas support very sparse vegetation with poor forage value, due to the low elevation, aridity and proximity to the salty Sevier Lake playa. Livestock water sources would be protected by a lease stipulation. There could be indirect effects to livestock use due to ROW development. There could be safety issues for livestock due to increased road traffic under the RFD.

Migratory Birds

- Bird mortality may occur among neo-tropical birds, shorebirds, and waterfowl that are attracted to solar ponds. Migratory birds, primarily shorebirds and waterfowl, seasonally may be attracted to open water habitat created by evaporation pond operations. Birds landing on these ponds can become encrusted with salt and may drown. Birds that preen their feathers can become sick or die to ingesting too much salt. Birds may also suffer from cold stress as the salt crystals reduce the insulating ability of the feathers (www.fws.gov/mountain-prairie/contaminants/contaminants3.html). (See also Sensitive Animal Species, below).

Socio-Economics

- A positive contribution is expected to the local and state economies; actions under the RFD would bring jobs and money to the local area.
- Transfer of water rights from agricultural to mineral extraction use could decrease the area of irrigated fields which would have impacts on the local economy.

Threatened, Endangered, Candidate, or Sensitive Animal Species

- The California condor, Greater sage grouse, Least Chub, and Utah prairie dog are threatened, endangered or candidate species identified by the USFWS to occur within Millard County. After further review and consideration of the species home ranges and habitat requirements, the FFO finds that these species do not occur within or reasonably near the proposed action and conclude a “no effect” determination for these species. No further analysis is required.
- Special status species such as raptors, are known to occur within the vicinity of the proposed action. Species include but are not limited to, golden eagles, Ferruginous hawk, prairie falcon, burrowing owls and others. Raptors are protected under BLM *Best Management Practices for Raptors and Their Associated Habitats in Utah* 2006. Indirect impacts associated with construction and operations (ex. increased noise, traffic, humans) may impact foraging, roosting, breeding, and nesting behavior. Raptors are included in the EA analysis under Migratory Birds.

Visual Resources

- Bureau Manual- 8400 provides the authority for development and implementation of Visual Resource Management (VRM) of public lands. The WSRA RMP defines the VRM management classes for this plan. The project area is within a VRM Management Class IV and meets the requirements of the RMP. The project area is bounded on the north end of the lakebed by US Highway 6/50. The project area on the south end of the lakebed is bounded by Blackrock Road. Traffic on the north end would be unlikely to see a large portion of the project area. The project would probably be more visible by traffic on the south end, however traffic in this area is sparse and limited to a few local residents and casual travelers in the area.
- Visual resources are evaluated as part of activity and project planning and consider the visual sensitivity of the affected area. Recent visual resource inventories have indicated that the project area would rate at a “high” sensitivity. Visual “inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities” (BLM Manual H-8410-1). Development of the lakebed could result in an increase of a future VRM Inventory rating as Class IV (see page 6 of BLM Manual Handbook 8410-1 for an explanation of assignment of inventory classes). Also see Air Quality, above.

Water Resources/Quality (drinking/surface/ground) and Hydrologic Conditions

- Several new wells have been identified as being necessary for mineral extraction. Because of the large amount of water that would be required, there is a potential for harm to existing BLM water rights in the project area. The lease stipulations call for analysis of water resources and monitoring for effects to water right

holders. Stipulations also call for replacement of water resources to maintain existing uses such as livestock, agricultural, and wildlife.

Wetlands/Riparian Zones

- Although portions of the Sevier lakebed are often saturated at or very near the ground surface such that the hydrologic and the soils criteria for wetland designation may be present on the lakebed, the vegetation component is lacking. Because all three of these environmental parameters (hydrology, soil, and vegetation) must support a wetland determination, there are no defined wetlands associated with the lakebed, and no defined wetlands known within the lease area.
- There is no riparian vegetation on the Sevier lakebed. There is an area of low value riparian along the river bank and lake edges where the Sevier River enters the Lake. This habitat has undergone beetle treatment to kill the tamarisk. The few identified riparian areas (RMP Map 3) on lands near Sevier Lake include one site on the northern end of Sevier Lake and additional sites to the northeast of the project area, one site in the Cricket Mountains and one site in the San Francisco Mountains. It is possible that there are isolated riparian areas associated with stock ponds and springs that are outside of the lakebed and outside of the proposed lease areas, but nearby. However, the potential for indirect effects to off-lease wetlands or riparian areas is small since activities that are proposed under the RFD could likely be designed to avoid any wetlands or riparian areas.

Wildlife Other than Special Status Species

- Negligible habitat value exists on the Sevier Lake hardpan specifically. Review of Utah Division of Wildlife Resources heritage data base identifies substantial critical habitat value for pronghorn and mule deer around the perimeter of the lake and the surrounding area. Indirect impacts associated with construction and operations (ex. increased noise, traffic, humans) may impact movement patterns, foraging, and breeding behaviors.

1.8 Issues Considered but Eliminated from Further Analysis

Through development of the ID Checklist (See **Appendix A**) and associated resource clearance documents (**Appendix B**) BLM determined that the following resources and supplemental authorities are not present in the area potentially affected by the Proposed Action or they would not be affected to a degree that detailed analysis is required:

- Areas of Critical Environmental Concern
- Environmental Justice
- Prime or Unique Farmlands
- Fish Habitat
- Fuels/ Fire Management

- Greenhouse Gas Emissions
- Invasive Species/Noxious Weeds
- Lands/Access
- Native American Religious Concerns
- Ownership of Lakebed
- Paleontology
- Rangeland Health Standards
- Recreation
- Soils
- Threatened, Endangered, Candidate, or Special Status Plant Species
- Threatened, Endangered, or Candidate Animal Species
- Wastes (Hazardous or Solid)
- Wild and Scenic Rivers
- Wilderness/Wilderness Study Areas
- Woodland/Forestry
- Vegetation Excluding US Fish and Wildlife Service Designated Species
- Wild Horses and Burros
- Areas with Wilderness Characteristics*

*Under Secretarial Order No. 3310 and newly issued DRAFT BLM Manual 6300-2.1, Procedures for Considering LWCs (Lands with Wilderness Characteristics) in Land Use Planning, December 23, 2010, BLM was directed to maintain a current inventory of public lands with wilderness characteristics. In response to a citizen's proposal that was received as a comment to this project, the FFO conducted an inventory of wilderness characteristics.

The inventory followed direction in the 2010 draft Wilderness Inventory Manual 6300-01 and determined that the inventory area consisting of 206,458 acres of public land evaluated by the FFO staff does not contain wilderness characteristics. Documentation of the inventory is consistent with the Manual and is maintained at the FFO.

1.9 Summary

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposal in a way that resolves the issues, the BLM has developed two action alternatives. These alternatives, as well as a no action alternative, are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 4 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

This EA analyzes the Proposed Action (Alternative A), the No Action (Alternative B) and one additional action alternative (Alternative C) for the leasing action. Leasing for potassium and the mining of potash (potassium bearing minerals) would include both surface and subsurface brines on the Sevier dry lake bed. The Mineral Leasing Act of 1920 as amended (30 U. S. Code 181 *et seq.*) allows the extraction of chlorides, sulfates, carbonates, borates, silicates or nitrates of potassium (i.e. potash). Leasing of these lands under the authority of this act conveys the exclusive right for the lessee to drill for, mine, extract, remove, beneficiate, concentrate or otherwise process and dispose of potassium and associated deposits on the leased lands contingent upon complying with the terms and conditions of the lease along with any attached stipulations. Under 30 USC 284, "... if the interests of the Government and of the lessee will be subserved thereby, potassium leases may include covenants providing for the development by the lessee of chlorides, sulphates, carbonates, borates, silicates, or nitrates of sodium, magnesium, aluminum, or calcium, associated with the potassium deposits leased...". The 'associated deposits' in the case of Sevier Lake include mainly sodium chloride (salt) and magnesium chloride.

Once a lease is issued, mining cannot commence without an approved mining plan by the BLM in accordance with 43 CFR 3590, including "preparation of appropriate environmental analyses" (43 CFR 3590.2), and a permit from the State of Utah under the Utah Mined Land Reclamation Act of 1975. The regulation at 43 CFR 3500 requires an advance royalty to be paid at the beginning of the sixth lease year. This provides an incentive to start production. The advanced royalty can be recouped only by production in the year that it is paid. The maximum lease size for a potash lease parcel under the rules for Leasing of Solid Minerals other than coal and oil shale (43 CFR Part 3500) is 2,560 acres. Thus, Sevier Lake has been divided into many lease parcels according to the alternatives discussed (**Figure 2**).

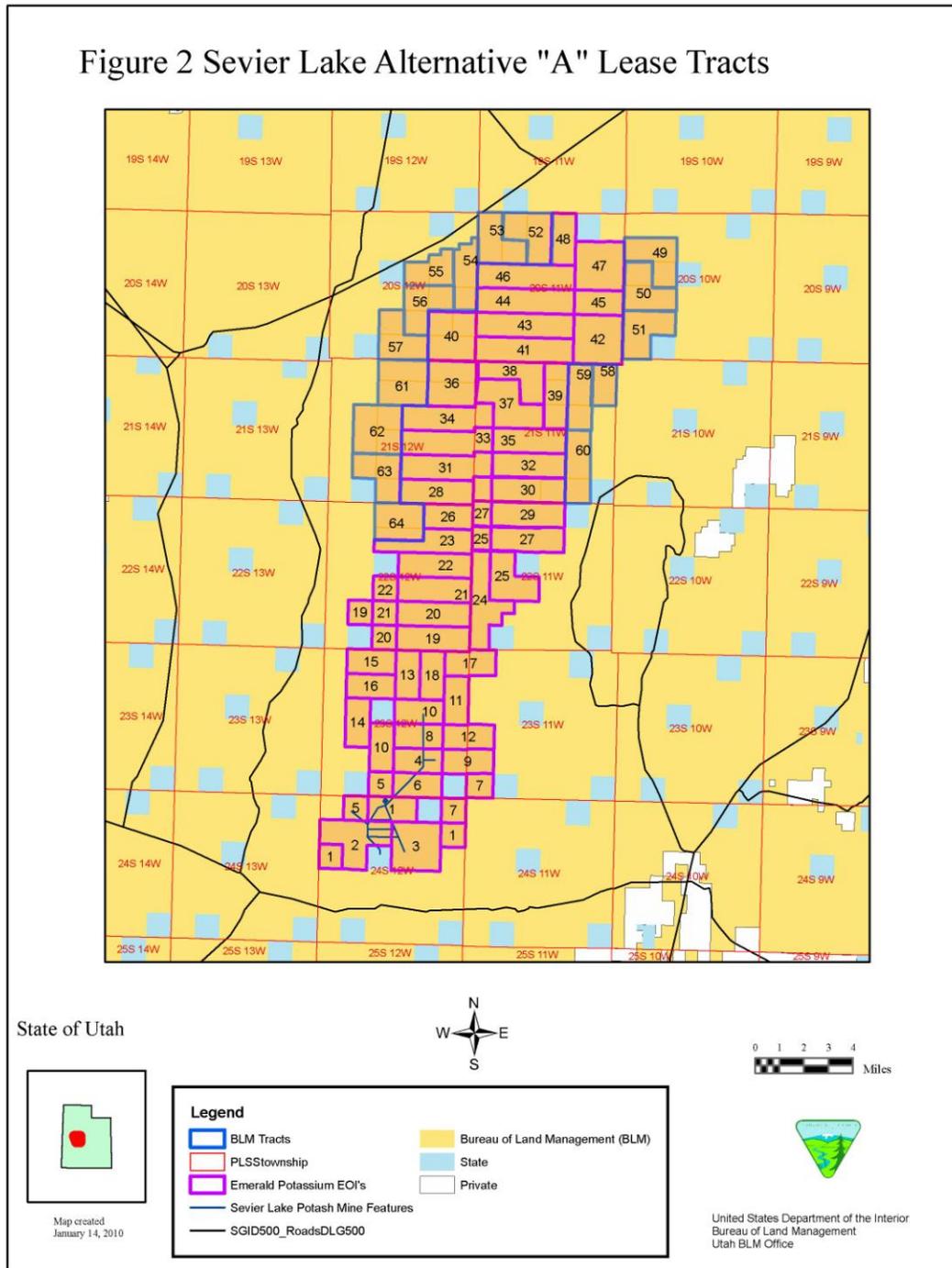
The following development alternatives are reasonable scenarios by which the BLM will analyze the effects of leasing and associated potential development of the Sevier dry lake bed. The BLM developed potential facility requirements for analysis in the alternatives using information from existing potash operations utilizing surface or near surface brines that are in production in Utah. The BLM reviewed different operations outside of Utah to develop requirements that are presented in this EA. For example, the BLM reviewed the brine operation at Clayton Valley Nevada. The Nevada Bureau of Mines and Geology special publication states that the operation has 50 wells producing brine from 30 to 325 gpm (Zampirro p.271, 2003) . Once leases are obtained, any mining plan submitted to the BLM would have to be analyzed under NEPA. Additional stipulations or conditions of approval (COA's) may be required once site-specific environmental analysis of the operator's proposed mining plan is conducted. If approved, these COA's would be attached to the BLM mining plan approval document.

The Proposed Action is to lease the Sevier Lake area of approximately 125,762 acres for production of potash. (See **Figure 2 –Sevier Lake Alternative A Lease Tracts**). The maximum acreage of potassium (potash) lease holdings for one entity in one State totals 96,000 acres, unless additional acreage is ‘necessary for extraction of potassium from concentrated brines in connection with an existing mining operation’ (43 CFR 3503.37). Given that the size of the area available for leasing under Alternative A is over the lease acreage allowed for any one entity prior to development, there is the potential for more than one entity to try and develop the resource. After reviewing similar operations throughout the state of Utah, BLM has concluded that this is highly unlikely. However, through a unitization or partnership, more than one entity could be involved in the same operation. To make a legitimate financial gain upon the resource it is estimated that the company would have to develop most if not all of the available lake surface. It is estimated that two operations would not be economically feasible. Future technology may make it possible for this to occur and this would be analyzed specifically if and when proposed.

The second development alternative would be to lease 96,000 acres (See **Figure 3 Sevier Lake Alternative C Lease Tracts**) as allowed by the regulations, and to have a lower production rate than Alternative A. The same mining and NEPA approval requirements would apply; the difference would be the amount of brine that would be processed and the amount of total disturbance necessary in order to support this lower level of production.

By leasing these minerals, it is assumed that the lessee would attempt to make a legitimate financial gain from developing the available resources. The alternatives were configured as foreseeable potential development. These include the facilities that would be required for a company to mine the area. This information was derived after reviewing two prior proposals on the Sevier Dry Lake (Crystal Peak Minerals 1989 and Salada 1997) as well as other operations located on the Great Salt Lake (U.S. Army Corps of Engineers (USACE) 2008 and USACE 2009) and in the West Desert (Intrepid 2010). This is an estimation based on the best available knowledge to provide a reasonable scenario for the analysis of the leasing action. Actual development would be analyzed when submitted to the BLM as part of a mining plan.

Figure 2 – Sevier Lake Alternative A Lease Tracts



2.2 Actions Pertaining to Alternatives A and C

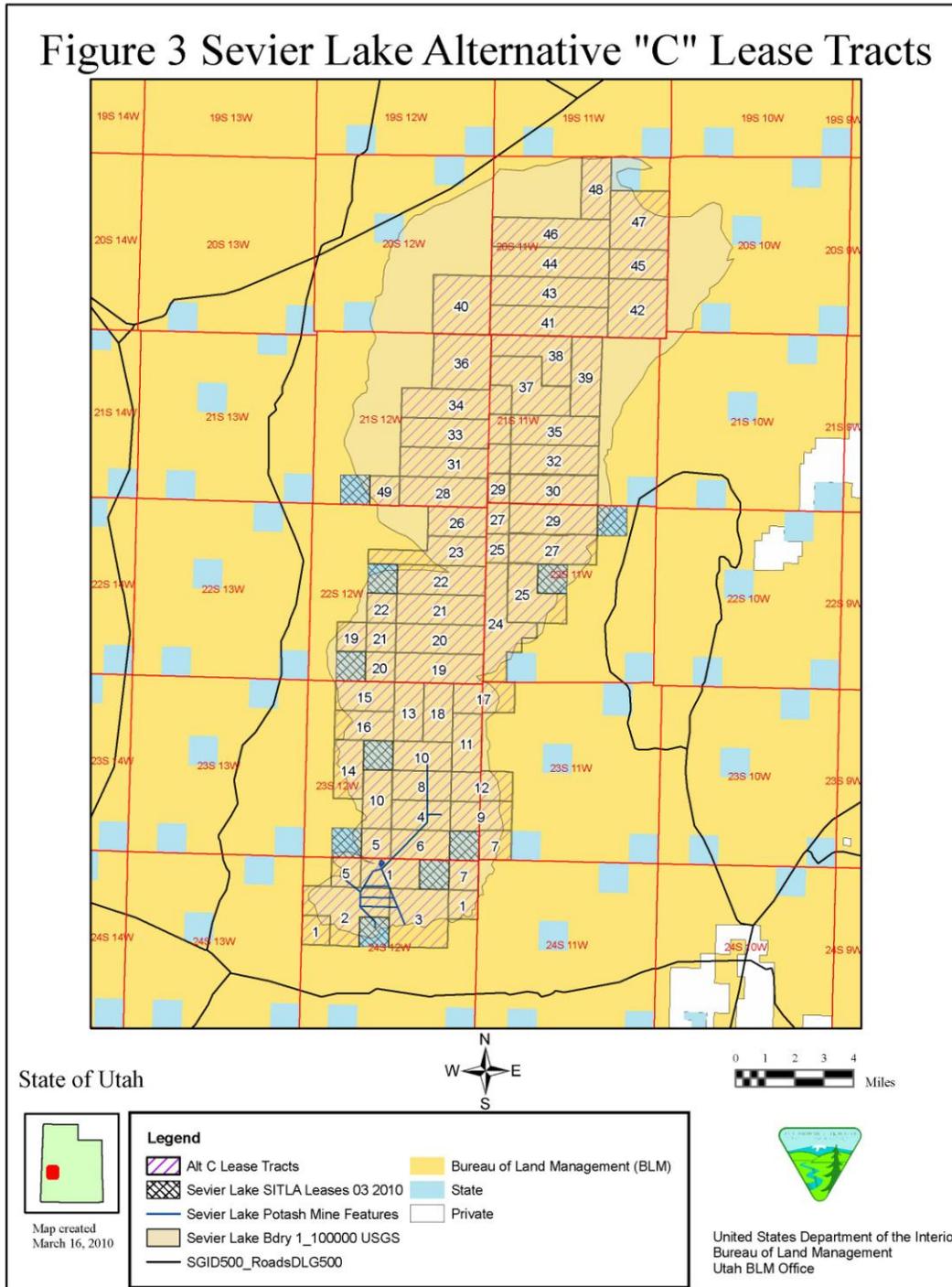
2.2.1 Facility Operations

Mineral operations on dry lake beds include a number of facilities. Operation size depends upon the amount of brine (water with minerals in it) that can be produced. It is reported that Great Salt Lake Minerals employs approximately 375 people (CLUI 2010); their operation currently utilizes leases on 43,000 acres and produces 400,000 tons/year of a specialty fertilizer (SOP) (Utah Mining Association 2009). Mineral operations on dry lake beds usually utilize a number of ditches for extraction of brines from shallow areas of the lake bed and a number of wells to extract the brine resource from deeper parts of the formation. The present ditches on the playa are reported to be 60 feet wide. An optimal ditch width or depth has not been determined.

Fresh water would be used to wash the salt at the processing plant and as needed to supplement insufficient quantities of brine water. The water supply for either action alternative would come from water rights that are approved by the Utah State Engineer. These water rights can be approved for fresh water wells, water on the surface of Sevier Lake, and groundwater below Sevier Lake.

The brine contains elements in the form of anions (-) and cations (+) such as (Chloride-Cl-, Sulfate-SO₄⁻⁻, Magnesium-Mg⁺⁺, Sodium-Na⁺, Potassium-K⁺). Once the brine is extracted it is placed into a series of transfer ditches, which move brines to a series of solar evaporation ponds. A series of ponds are utilized in order to target specific mineral production. The ponds tend to be large in surface area and fairly shallow; this helps to increase evaporation rates (it is reported that evaporation of the feed brines can approach 25,000 gallons per minute in July on Sevier Lake (Salada 1997)). Along with the large solar evaporation ponds, some operators use a dye to make the brine a darker color which also helps increase the evaporation rate. This helps make up for the fact that as the brine concentrations increase, and the specific gravity increases, the evaporation rate of the brine decreases. As water is evaporated from the brine, and minerals concentrate in the solar evaporation pond, they begin to precipitate. The minerals precipitate in a certain order as brines are moved from pond to pond. Once the minerals have precipitated, the remaining brine is removed. The minerals are removed by furrowing the material or other means and then they are transported to a crushing and drying facility. At this point they are ready for shipment or further processing. Some minerals remain in solution (such as magnesium chloride) and can be sold as a secondary liquid product. Depending upon the sequence of harvesting and the processing, a number of different products could be produced.

Figure 3 – Sevier Lake Alternative C Lease Tracts



The Sevier Lake potash reserves were estimated by Hazen Research at 5.2 million tons and, at a projected 50 percent recovery, would equate to 2.6 million tons recoverable. Production would continue for some 26 years at a 100,000 tpy production rate and some 6.5 years at 400,000 tpy (Howe & Berthold 1986). In addition, the mine would be in operation for an additional 2 to 3 years for the initial sodium chloride salt floor lay down and final reclamation would proceed for probably a few years after final potash production (See Production Report, **Appendix B**).

2.2.2 Other Characteristics Common to Alternatives A and C

For the purposes of determining the off-lease disturbances that would be required to develop the potash leases under Alternatives A and C, it is assumed that wells needed for fresh water supply along with their associated access roads would be located off lease; a power line and natural gas line would extend off lease; the county road south of the lake would be utilized for trucking to the highway and also to the rail spur needed to transport product. Throughout the year, portions of the lake surface would be flooded. The material required to construct berms and dikes to create ponds would be located both on and off lease; and the plant site along with a small lined magnesium chloride holding pond would be off the playa and on or off the lease. All other facilities (ditches, dikes, berms, evaporation ponds) would be located on the playa and on the leases. It is expected that Best Management Practices (BMPs) such as dust control measures would be included in the proposed development plans and implemented for facility construction and operations on and off-lease to minimize the potential for related resource impacts. In addition, all necessary approvals (See **Table 1-1**) would be obtained prior to construction disturbance or operations on or off-lease.

Below are stipulations that would be attached to the leases as part of Alternatives A and C and are therefore part of the Proposed Actions under these Alternatives. Air quality stipulations will be developed in a subsequent NEPA document during the analysis of a proposed mine plan that would include ROW leasing and production facilities. For purposes of analysis it is assumed that the wording in the stipulations would be dependent upon construction, production and ROW leasing details. ROW approvals would include use of dust control measures, such as water sprays or dust suppressants, to reduce dust and other environmental protection measures, such as posting and enforcing speed limits, and covering storage piles.

- 1) Ditches, Berms, Drill Holes and Other Excavations:** The lessee shall fill in pits, ditches, and other excavations within reason, to restore the surface of the leased land and access roads to their former conditions as far as reasonably possible, including removal of structures and removal of all debris. All drill holes shall be filled with cement or other suitable material as approved by the Authorized Officer (AO) prior to abandonment of the wells. This shall take place upon any partial or total lease relinquishment or cancellation or at any other time prior thereto when required and to the extent deemed necessary by the lessor.

- 2) **Mining Unit:** Prior to production, a Unit Agreement (royalty allocation agreement) shall be approved which establishes the fee, Federal and State lands as a unit for production royalty purposes. Along with this, the mining unit shall count production from anywhere on the fee, Federal or State lands as production on any of the lands.
- 3) **Waste Certification:** The lessee shall provide upon abandonment and/or sealing off a mined area and prior to lease termination/relinquishment, certification to the lessor that, based upon a complete search of all the operator's records for the mine and upon their knowledge of past operations, there has been no hazardous substances per (40 CFR 302.4) or used oil as per Utah State Management Rule R-315-15, deposited within the lease, either on the surface or underground, or that all remedial action necessary, including disposal in an appropriately permitted disposal facility, has been taken to protect human health and the environment with respect to any such substances remaining on the property. The back-up documentation to be provided shall be described by the lessor prior to the first certification and shall include all documentation applicable to the Emergency Planning and Community Right-to-know Act (EPCRA, Public Law 99-499), Title III of the Superfund Amendments and Reauthorization Act of 1986 or equivalent. *All waste must be removed and all hazardous materials used or produced must be reported to the FFO.
- 4) **Noxious Weeds:** Equipment will be cleaned prior to entering the proposed project area to minimize the introduction of noxious/invasive weeds in other areas. The lessee/operator shall annually inspect active and inactive operational areas on each lease for noxious weeds (that are listed for control by the State of Utah, the Utah BLM and Millard County). If any of the listed weeds are found, control must be initiated by the lessee. The lessee shall contact the Weed Control official at the FFO in advance to discuss the planned control method (lessees are required to obtain a permit prior to the control through the application of approved herbicides). The lessee shall chemically treat annual invasive weeds (such as cheatgrass) in areas of high activity so as to prevent the potential of fire on the site and buildup of fire potential. Active and inactive operational areas on leases shall be inspected annually on each lease for noxious weeds. A plan shall be submitted and approved by the AO prior to the initiation of any control of weeds.
- 5) **Survey Monuments:** The Lessee at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced corner monuments (section corners, quarter corners, etc.) their accessories (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by the BLM, to the standards and guidelines found in the Manual of Surveying Instructions, U.S. Department of Interior.

- 6) As Built Drawings:** The Lessee will submit to the Deputy State Director, Lands and Mineral Resources, BLM Utah State Office, and the FFO, a scaled map showing the construction and the survey coordinates (State Plane or metes and bounds description) of each of the mine features, buildings, ditches, pumps etc., within 90 days after construction is complete. The surveyor that conducts the survey will be licensed and shall stamp the drawing. Land features will be shown on the drawing. These will include but are not limited to section corners, roads, and section lines. An updated map will be sent to BLM within 90 days after construction is completed on any new sites.
- 7) Reclamation:** The mining plan must include an interim reclamation plan and a final reclamation plan. A seeding and grading plan and schedule will be submitted and approved by the AO prior to finalizing any reclamation. Upon reclamation of disturbed areas surrounding the lakebed where revegetation is planned, plant growth shall be monitored for a minimum of three years or until the reclamation standards of success have been attained. All previously vegetated disturbed areas will attain **75% basal cover** based on similar undisturbed adjacent native vegetative community, and comprised of desired species and/or seeded species within 5 years of initial reclamation action. However if after three (3) growing seasons there is less than **30%** of the basal cover based on similar undisturbed native vegetative community, then the AO may require additional seeding efforts. The reclamation bond/liability will not be released until the AO accepts the reclamation in writing. Concurrent reclamation practices will be used. In the event that this standard cannot be met, the lessee may request a waiver to this stipulation. The waiver must state as a minimum, the reasons for the request and show a history of the reclamation attempts by the lessee. The AO may waive the requirement on his discretion.
- 8) Water Replacement:** The Lessee at his expense, will be responsible to replace any water resources (that contain in a baseline analysis of <10,000 mg/l Total Dissolved Solids (TDS)), that are lost or adversely affected (quality or quantity) by their mining operations. These shall include (1) developed ground water sources existing at lease issuance or new sources that may be developed during the term of the lease, and (2) other surface and/or ground water sources that may be identified by the BLM for protection as part of the conditions for any mining plan approvals. If replacement is required, the lessee shall replace the sources with an alternate source in the same quantity and quality to maintain existing uses. The existing uses shall include but not limited to riparian habitat, fishery habitat, livestock, wildlife, domestic, agricultural, or other land uses. The lessee/operator shall obtain sufficient base line data and monitoring in order to establish parameters to show whether water resources are affected.
- 9) Wildlife and Plant Species:** Sufficient base line data shall be established as determined necessary by the AO. In order to accomplish this, the lessee shall submit an acceptable wildlife and plant inventory prior to conducting any surface disturbing activity. Prior to conducting the inventory, an inventory plan shall be submitted and approved by the AO for the mining and/or exploration plan. The

inventory plan shall include Federally Listed or Candidate species, as well as BLM Sensitive plant or wildlife species, including FWS Birds of Conservation Concern (2008) and big game species. The inventory plan shall address, but not be limited to the following: species occurrence, migration corridors, winter use, reproductive periods, and habitat value, including the invertebrate community. The plan shall address the time periods to be inventoried by species. The inventory shall be conducted by a qualified individual approved by the AO prior to the commencement of the inventory. The final inventory shall be submitted to the AO within 60 days after completion. A Wildlife Mitigation Plan shall be submitted as part of any mining or exploration plan and will describe actions to be taken to avoid, minimize, or reduce any future impacts to wildlife. The plan shall include but will not be limited to, survey/monitoring of species; the rescue, recovery, reporting and rehabilitation of injured wildlife as practicable; recovery and reporting of wildlife mortalities; and mitigation and adaptive management strategies. The species to be monitored shall include species on the Wildlife Action Plan, developed by the Utah Division of Wildlife Resources, and the Partners in Flight priority species. The lessee shall submit a report annually discussing mortality rates and the effectiveness of any mitigation measures taken. At the discretion of the AO this reporting requirement may be waived. The cost of conducting the inventory, preparing reports and the mitigation plan, and carrying out subsequent mitigation measures and reporting on the effectiveness of such measures, shall be borne by the Lessee.

- 10) Cultural Resources:** The Lessee shall contact the AO with sufficient information and request a determination if a cultural inventory and/or tribal consultation is necessary. If it is necessary and prior to BLM approval to initiate potash production, the lessee shall conduct a cultural resource inventory to BLM Utah Class III inventory standards on all lands where they may be surface disturbance within the boundaries of the leased lands. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e. Archaeologist, historian, or historical architect, as appropriate), approved by the AO. A report shall be generated of the inventory and recommendation for protecting any cultural resources that are identified. The lessee shall undertake measures, in accordance with instructions from the AO to protect cultural resources on the leased land. The lessee shall not commence the surface disturbing activities until permission to proceed is given by the AO. The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the Lessee. The lessee shall protect all cultural resource properties within the lease area from lease related activities until the cultural resource mitigation measures can be implemented. If cultural resources are discovered during the operations under this lease, the lessee shall immediately bring them to the attention of the AO. The lessee shall not disturb such resources without written authorization from the AO. It may be necessary for the lessee to hire a cultural contractor to assist the BLM in determining the following: 1) whether the materials appear eligible for the National Historic Register of

Historic Places; 2) the mitigation measures that the lessee will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and, 3) a time frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

- 11) Corps of Engineers:** The lessee shall work with the BLM in contacting the Corps of Engineers to comply with Section 404 of the Clean Water Act and, as necessary, in obtaining a 404 Permit.
- 12) Drilling Results:** The lessee must provide the AO within 30 days of completion, all geologic, geochemistry, water chemistry, groundwater occurrence, aquifer test results, completion details, and other similar data that they collect from any wells or borings that are installed or tested as part of exploration or development activities on the leases or associated with the leases.
- 13) Hydrologic Analysis:** Sufficient base line data shall be established prior to conducting any surface disturbing activity which shall be determined necessary by the AO. In order to accomplish this, the lessee shall submit for review and approval by the AO a plan to analyze ground and surface water interactions as part of any operations or exploration on the leases. The plan shall be submitted prior to or concurrent with a Mining or Exploration plan under 43 CFR 3592.1. The plan shall include, but not be limited to the following items, and shall describe how the lessee proposes to;
(1) develop sufficient baseline groundwater information to document existing hydrogeology associated with Sevier Lake basin fill and underlying carbonates, encompassing a reasonable area of potential resources, springs, and the alluvial and bedrock aquifers. This shall include items such as the location, size, and depth of any hole that will encounter water and/or brine as well as any information that will be collected on each hole.
(2) Determine the potential impacts to existing water right holders, wells, wetlands, and surface and groundwater throughout their operations. Water chemistry (including stable isotopes as necessary), estimated flow and water quantity (water balance) shall be addressed.
(3) Monitor the actual impacts to groundwater resources throughout and surrounding the operation including but not limited to changes in meteoric precipitation and springs, wells (base conditions, water levels, and chemistry conditions prior to construction and monitoring after construction), wetlands, and ditches. Wells, wetlands, and springs (at sites determined to be relevant based upon the groundwater study that would be conducted prior to development) shall be monitored during operations in order to minimize potential impacts to groundwater resources by allowing an early identification. Further, the plan shall contain sufficient detail to allow it to be independently assessed, and include such things as the type of groundwater model that would be used (and/or other methods of analysis), phasing of the analysis and proposed iterative studies. The plan shall also contain a list of people and their qualifications to accomplish the work and a list of deliverables

with a timing schedule. The lessee shall be responsible for any cost incurred for the plan and the accomplishing of the work.

- 14) Lands and Realty:** Existing roads and trails would be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than four inches remaining on the road from the project would be repaired at the AO discretion. The proposed project would be subject to valid prior existing right-of-way. The Master Title Plat and LR2000 Geo Report show an existing right-of-way within the project area. The proposed project is subject to this existing right-of-way. This Holder shall be contacted and coordinated with if their ROW would be affected by this project.
- 15) Dust Control Plan:** The operator/lessee shall develop a dust control plan for review by the AO prior to conducting any operations under the lease. This shall include but not be limited to (1) the treatment of road and disturbed surfaces, (2) speed limits to control dust, (3) stabilizing piles and (4) conditions under which work will cease, such as operations during high wind conditions. The costs of the controls shall be borne by the lease/operator.
- 16) Riparian and Wetland Inventory:** The operator/lessee shall conduct an inventory for riparian and wetlands. The inventory shall be acceptable to the AO prior to the commencement of any surface disturbing activities. The inventory shall include but not be limited to; (1) maps at a sufficient scale to show the size and location of these areas. This inventory shall include the project area and the Sevier River within Township 20 South, Range 10 West if the AO deems it necessary. (2) Vegetation species shall be addressed along with percent cover, and water quality, temperature and quantity, and soil types. The cost of the inventory shall be borne by the lessee/operator.
- 17) Lighting:** The operations plan shall describe the measures that the operator/lessee will take to minimize the amount of light that will be produced. These shall include but not be limited to lighting shield, directional lighting and use and placement of portable lights. The AO may require a night sky model.

2.3 Alternative A – Proposed Action: Sevier Lake Large Leasing Area Alternative (125,762 Acres)

The Proposed Action would include placing the entire dry lake surface up for lease sale and utilizing the entire lake bed surface for the production of brines and mineral resources. Average production would be estimated at 400,000 tons per year (tpy); the life of mine under this production scenario would be estimated at 6.5 years, in addition to 2 to 3 years up front, and 3 to 5 years for reclamation.

The facilities and water supply for the Proposed Action under this alternative, which have been reasonably estimated in the development scenario include:

- 300 miles of on-lease collection ditch
- 120,000 acre-feet of brine annually (39 billion gallons) with some of the water supplied from on-lease deep brine wells
- 900 acre-feet of fresh water annually – estimated 200 acres for rights of way for 7 off-lease wells
- Pipelines as needed to transport water from site to site; pipelines would extend off lease
- 500 acres for a crushing, drying and bagging facility- may or may not be sited on lease
- 47,000 acres of solar ponds on lease
- 250 miles of pond berms and dikes; pond walls and berms would be constructed on lease from onsite and offsite borrow materials.

2.4 Alternative B – No Action:

Under this Alternative, the parcels would not be offered for competitive leasing at this time. Any rights of way necessary for off-lease activities would not be pursued. Analysis of the No Action alternative in this EA provides a baseline for analysis of potential impacts that could occur under Alternatives A and C.

2.5 Alternative C - Sevier Lake Leasing Alternative (96,000 Acres):

This Alternative for leasing 96,000 acres would lease a portion of the Sevier dry lake bed (**Figure 3**) and would also have a substantial reduction in the amount of brine and fresh water that would be required for the operation, because a lesser production rate is being assumed. The average production rate would be estimated at 100,000 tons per year. The life of mine under this scenario would be estimated at 26 years, in addition to 2 to 3 years up front, and 3 to 5 years for reclamation.

This scenario would exclude areas which are known to have important recorded cultural sites, at least four of which are NRHP-eligible. This Alternative would also exclude any areas which may have riparian concerns. The regulations at 43 CFR 3503.37 control the amount of acreage a single lessee can have in a single state. Operations and facilities common to both Alternative A and C would be required as stated in **Section 2.2.2**.

- The facilities and water supply under this alternative, which have been reasonably estimated in the development scenario include: 100 miles of on-lease collection ditch
- 15,000 acre feet brine per year (5 billion gallons) with some of the water likely supplied from on-lease deep brine wells
- 600 acre feet of fresh water per year - estimated 135 acres for rights of way for off-lease wells

- Pipelines as needed to transport water from site to site; pipelines would extend off lease
- 100 acres plant site for crushing and sizing on lease or off lease; access roads would range about 10 miles to the North or 10 miles to the South
- 10,000 acres of solar ponds on lease
- 60 miles of pond berms and dikes; pond walls and berms would be constructed on lease from onsite and offsite borrow materials.

2.6 Alternatives Considered but Eliminated from Further Analysis

An alternative to lease 65,000 acres was proposed but eliminated from analysis as it would not provide a large enough area to economically develop and provide maximum recovery of the resource under currently-known technologies.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the ID Team Analysis Record Checklist found in **Appendix A** and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

3.2 General Setting

Sevier Lake, in Millard County, is located in western Utah's Sevier Desert (**Figure 1**) in a broad valley 10 to 15 miles wide, bounded on the east by the Cricket Mountains and on the west by the House and Confusion Ranges. The San Francisco Mountains lie just south of the lake and the Wah Wah Mountains are to the southwest with the Wah Wah Valley (and hardpan) between them. To the north of Sevier Lake is the gently south-sloping surface of the Sevier Desert. Sevier Lake is a large terminal discharge playa, where waters entering the basin from surrounding groundwater aquifers and the Sevier River evaporate to the atmosphere. The remote playa is a featureless plain, varying only slightly in elevation - between 4,517 feet and 4,523 feet - over its approximately 133,000 acres (207.8 square miles) (Rasmussen 1997). It is about 30 miles southwest of Delta and 25 miles north-northwest of Milford. Access to the lake's northern end is by U.S. Highway 6-50, a distance of about 37 miles southwest from Delta. Access to the lake's southern end is by State Road 257 for a distance (as the crow flies) of about 48 miles south from Delta to the Black Rock railroad siding, and then about 13 miles west from the siding to the lake. A secondary north-south-trending road runs east of the lake, and connects Highway 6-50 and State Road 257. The Union Pacific Railroad, located about 10 to 11 miles east of the lake, parallels State Road 257.

The Black Rock weather station (approximately 10 miles east of Sevier Lake) recorded average winter temperatures between 15 and 43 degrees F, and average summer temperatures between 49 and 88 degrees F for the years 1971 to 2000. Prevailing winds are from the southwest. Average annual precipitation at Black Rock between 1971 and 2000 was 9.3 inches. The majority of the precipitation in this area falls in late summer and early autumn, with spring being the second wettest time of the year. Potential evaporation rates are much higher than precipitation rates in this part of Utah.

Sevier Lake is within the Basin and Range Physiographic Province, which is noted for numerous north-south oriented, fault-tilted mountain ranges separated by intervening, broad, sediment filled basins. The playa itself is barren of vegetation. The slopes surrounding the playa support two plant community types, Salt Desert Shrub and Halophytic groups (salt-resistant plants).

Sevier Lake has historically been developed to some extent, for mineral resources, as discussed below. Other activity in the area includes grazing on the sheep allotments, but little forage is available near the lake. Generally, this is a vast open area with very little obvious human activity or development.



East edge of Sevier Lake, looking north. June 2009.

3.2.1 Sevier Lake Development History

Mineral resources within the Sevier Lake basin were initially developed by Crystal Peak Minerals Corporation (CPMC) in the late 1970's through the early 1990s. CPMC investigated the brines and the lake bed muds for their potassium potential. They drilled and cased over 700 auger holes that were 20 feet deep. The holes were located near the center of each quarter section throughout most of the lake bed. Four deep (approximately 900 foot) holes were drilled in the Sevier Lake bed and one in the Wah Wah hardpan to the south (Gwynn p.12 & 23, 2006). Two weather stations were installed but were destroyed when the lake levels rose in 1983. In 1987 an additional weather station was established and remained until 1993 (Gwynn p. 18, 2006). Also in 1987, CPMC drilled a 6 inch "test well" 532 feet deep near the south end of the Sevier lake playa (CPMC, 1987). The BLM issued Preference Right Leases for potassium on the entire lakebed after the company showed that sufficient resources were present to justify economic development. This project was proceeding, but ended with the death of the principal investor. CPMC had, under BLM approvals, constructed 3,000 acres of solar evaporation ponds, evaporated over 1 million tons of salt (Gywnn p. 18, 2006), and constructed 4.8 miles of brine collection ditch. It was estimated that during this time period CPMC

spent approximately \$7.5 million to test and characterize the mineral resources of the lake bed, develop database for economic recovery and complete some of the infrastructure (Gwynn p. 18, 2006). During reclamation by CPMC, the dikes were breached and lowered, with the expectation that a rise in the lake level would obliterate them. Lacking sufficient rise in the lake levels after that time, however, the features remain.

In the late 1990s, Salada Minerals developed a mining plan for state (State Institutional Trust Lands Administration [SITLA]) and federal (BLM) potash leases on the Sevier dry lakebed, that was approved in 1997 with a Finding of No Significant Impacts (FONSI) (see summary of minerals-related NEPA documents for Sevier Lake area, **Appendix C**). Unable to obtain adequate funding, no work was completed on the project; SITLA cancelled the state potash leases in June 2000; Federal leases were relinquished in 2001. SITLA leases on the Sevier dry lakebed were acquired by Emerald Peak Minerals, LLC in 2008. Sevier Lake and the area surrounding the lake remain relatively undeveloped, other than Highway 6-50 at the north end of the lake and utilization upstream of as much as 75 percent of the water that historically reached Sevier Lake from the Sevier River (Tetra Tech 2004).

3.3 Resources/Issues Brought Forward for Analysis

3.3.1 Air Quality

The Clean Air Act identifies six common air pollutants that are found all over the United States that can injure health, harm the environment, or cause property damage. These “criteria pollutants” include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter smaller than 10 microns in aerodynamic diameter (PM₁₀), particulate matter smaller than 2.5 microns in aerodynamic diameter (PM_{2.5}), and sulfur dioxide (SO₂). The Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards and the Utah Division of Air Quality (UDAQ) have set National Ambient Air Quality Standards (NAAQS) for these pollutants. If the air quality in a defined geographic area (such as a metropolitan area or larger rural area or county) meets the NAAQS, it is called an attainment area; if it does not meet the NAAQS it is called a nonattainment area and a comprehensive maintenance plan must be developed to reduce pollutant concentrations to a safe level (UDAQ 2010). NAAQS are listed in **Table 3-1**, below.

Table 3-1 National Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS
Carbon Monoxide	1 hour	40 mg/m ³
	8 hour	10 mg/m ³
Lead	Rolling 3 Month Average	0.15 µg/m ³
Nitrogen Dioxide	Annual	53 ppb
	1 hour	100 ppb
Ozone	8 hour	0.075 ppm
Particulate Matter (PM ₁₀)	24 hour	150 µg/m ³
Particulate Matter (PM _{2.5})	24 hour	35 µg/m ³
	Annual	15 µg/m ³
Sulfur Dioxide	3 hour	0.50 ppm
	1 hour	75 ppb

Millard County is an attainment area for the NAAQS. The majority of emissions in Millard County are attributable to fugitive dust from agricultural and construction activities. In addition, smoke from wildfires and prescribed burning can impact ambient air quality on a seasonal basis. For example, the Milford Flat Wildfire impacted air quality in most of Utah with airborne dust, ash, and smoke in July 2007 (Utah Fire Info 2010), and continues to do so due to exposed soils and erosion (BLM 2008). Sevier Lake is a fairly remote and undeveloped area of Millard County. The air quality is generally very good, with the exception due to dust storms in the area, which are considered “exceptional events” under 40 CFR 50. An exceptional event is one that meets the criteria of “an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event.” As per 40 CFR 50.14, EPA excludes “data showing exceedances or violations of the national ambient air quality standard that are directly due to an exceptional event from use in determinations” of compliance. Under the Clean Air Act, at 42 U.S.C. 7513 (f), it states that the EPA may waive attainment requirements “where the Administrator determines that anthropogenic sources of PM-10 do not contribute significantly to the violation of the PM-10 standard in the area.” The closest major industrial facility is the Intermountain Power Plant (IPP) located near Delta, Utah.

The EPA's Prevention of Significant Deterioration (PSD) program applies to new major sources or major modifications at existing sources for pollutants where the area in which the source is located is in attainment or unclassifiable with the NAAQS. PSD does not prevent sources from increasing emissions, but is designed to protect public health and

welfare, and to preserve, protect, and enhance the air quality in Class I areas such as national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value. The closest of these PSD Class I areas to Sevier Lake are Great Basin National Park in Nevada, and Capitol Reef, Bryce, and Zion National Parks in Utah.

The soils on Sevier Lake are poorly developed and tend to have a high wind erodibility index (NRCS 1993). Frequent windy conditions in the wide open expanses of the West Desert pick up dust and salt, particularly from alluvial fans and playas such as Sevier Lake in basin areas, contributing to hazy conditions as far away as Salt Lake City and the Wyoming western border (Struthwolf 1997).

In the winter and early part of the spring, some tributary water reaches the dry lake bed. “Satellite imagery acquired from August 1999 through August 2002 shows the presence of water on the surface of Sevier Lake typically from November through April. During the remainder of the year, May through October, the lake’s surface is dry” (Gwynn, p 11, 2006).

In 1979-1983 CPMC, who was the lessee on the preference right leases that were issued by the BLM, constructed and operated weather stations on the Sevier Lake. The wind was analyzed because the evaporation rates on the Sevier Lake playa took into account more than just temperature. In 1979 two Campbell Scientific, Inc. weather stations were installed at the Sevier Lake playa. Data that was obtain included air temperature, relative humidity, average solar radiation, precipitation wind direction and wind speed. In 1987 a new weather station was put in because the older stations were destroyed by flood waters. The only data that was recorded for wind speed and direction (**Table 3-2**) was from the south station that ran from July 1979 to March 1983 (Gwynn, p. 18-21, 2006).

Table 3-2 Wind Velocity and Direction at Sevier Lake

Direction in Degrees Azimuth North = 0 degrees	Wind Velocity Minimum Meter/second₁	Wind Velocity Average Meter/second	Wind Velocity Maximum Meter/second	Percent of Time wind blows in this direction
0-30	0.000	.870	4.200	10.55
30-60	0.000	.186	1.183	3.71
60-90	0.000	.109	0.858	2.38
90-120	0.000	.221	0.724	3.86
120-150	0.030	.633	2.846	9.96
150-180	0.037	1.418	4.430	17.70
180-210	0.007	2.305	20.950	19.19
210-240	0.000	.681	3.715	7.73
240-270	0.000	.201	1.389	3.65
270-300	0.000	.083	0.692	2.12
300-330	0.000	.339	6.968	4.90
330-360	0.000	1.255	11.130	14.67

Taken from Gwynn (2006, p. 20&78-79), Note: It is unknown why the percentage sums to 100.42 percent and not 100%. Data is from July 27, 1979 to November 4, 1979 and March 1983. Measurements are assumed to be in Meters per second. 1 Meter/second = 2.2 miles per hour.



Dust storm along Cricket Mountains, view from Sevier Lake looking east. June 2009.

3.3.2 Cultural Resources

Cultural resources are defined as any definite location of past human activity identifiable through field survey, historical documentation, and/or oral evidence. Cultural resources include archaeological or architectural sites, structures, or places, and places of traditional cultural or religious importance to specified groups whether or not represented by physical remains. Cultural resources have many values and provide data regarding past technologies, settlement patterns, subsistence strategies, and many other aspects of history.

The National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations (36 CFR 60 and 800) require that federal agencies take into account the effects of their undertakings on cultural resources that are listed or eligible for listing to the National Register of Historic Places (NRHP); eligible or listed resources are identified as “historic properties.”

The Area of Potential Effect (APE) for cultural resources was determined to be the lease parcel boundaries. A Class I literature review was conducted that included a one-mile buffer around the APE (Baxter 2010). Based upon review of records for the Sevier Lake potassium leasing proposal, twenty-five previously recorded archaeological sites are

present in the study area (within 1 mile of the proposed potassium leasing area, see **Table 3-4**). All of these sites are located along the northeastern margins of Sevier Lake near the mouth of the Sevier River; 15 are located within the boundary of the Sevier Lake potassium leasing area, 10 are located on lands outside the leasing area. There is a moderate chance that additional prehistoric sites would be located near the margins of Sevier Lake.

The 15 sites within the leasing area include 14 prehistoric lithic scatters and 1 prehistoric artifact/feature scatter with burial. A total of nine sites are unevaluated for the NRHP, four are NRHP-eligible, and two of these sites have been recommended ineligible for the NRHP. The NHPA sets forth procedures for considering effects to historic properties and supports and encourages the preservation of prehistoric and historic resources. It directs federal agencies to consider the impacts of their actions on historic properties. The NHPA established the Advisory Council on Historic Preservation (ACHP) and tasked the ACHP with administering and participating in the preservation review process established by Section 106. Section 106 of the NHPA, as amended, requires federal agencies to take into account any action that may adversely affect any structure or object that is, or can be, included in the NRHP. These regulations, codified at 36 CFR 800, provide criteria to determine if a cultural resource site is eligible. Beyond that, the regulations define how those properties or sites are to be dealt with by federal agencies or other involved parties. These regulations apply to all federal undertakings and all cultural (archaeological, cultural, and historic) resources.

A Traditional Cultural Property (TCP) is a property that is eligible for inclusion on the NRHP “because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community (Parker and King 1994).” Stated another way, a significant TCP is defined as a property with “significance derived from the role the property plays in a community’s historically rooted beliefs, customs, and practices (Parker and King 1994).”

Native American consultation was initiated on May 7, 2010 when BLM sent a letter and the Class I Report (Baxter 2010) to tribes inviting them to comment and provide assistance in identifying properties of traditional, religious, or cultural importance. No concerns were identified.

Cultural Overview

Prehistoric Period

The Eastern Great Basin has a long record of human occupation. The archaeological record demonstrates a significant reliance on wetland and lake-edge resources by both hunters and gatherers during the Paleoindian, Archaic, and Late Prehistoric periods and horticulturalists during the Formative period. Several summaries of regional prehistory have been written (Jennings 1978; Aikens and Madsen 1986; Grayson 1993). **Table 3-3** summarizes the prehistoric and historic periods.

The following gives a brief general description for each time period. A more detailed cultural overview for the region is available in Mullins (2007) or Baxter (2010).

Paleoindian Period (12,000 to 7000 BP/5000 B.C.)

The archaeological record suggests that the first significant human occupation of the Americas occurred near the end of the Pleistocene. During this period, climates across North America were generally colder and moister than during later periods and numerous glaciers covered large areas of the continent. The Great Basin region during this period was characterized by the presence of numerous pluvial lakes, rivers, and large, extensive marshlands. Lake Bonneville was one of the largest pluvial lakes in the Great Basin. At its largest, Lake Bonneville covered most of the eastern Great Basin and inundated several of the large, closed basins present in the region, including the Great Salt Lake and Sevier basins.

Table 3-3 Summary of Time Periods

Time Period	Date
Prehistoric	
Paleoindian Period	12,000 to 7000 BP/5000 B.C.
Archaic Period	7000 BP/5000 B.C. to A.D. 300
Formative Period	A.D. 300 to 1200
Late Prehistoric Period	A.D. 1200 to 1776
Historic	
Early Euro-American Exploration	A.D. 1776 to 1847
Early Settlement	A.D. 1847 to 1868
Late Settlement and Development	1869 to 1916
World War I and the Great Depression	1917 to 1940

BP –Before Present

Lake Bonneville began to accumulate water around 30,000 years before present and is marked by four major levels: the Stansbury, Bonneville, Provo, and Gilbert. Between 16,000 and 14,500 years ago, the Bonneville level extended as far south as Lund, Utah, in Iron County, and inundated much of the Sevier Desert. Between 14,500 and 13,500 years ago, the lake had receded to the Provo level which also included Sevier Lake and surrounding valleys. During the regressive phase of Lake Bonneville, between 12,000 to 10,000 years ago, a second smaller lake, named Lake Gunnison, formed in the Sevier basin, with the Gilbert level of Lake Bonneville present in the Great Salt Lake Basin to the north. The two lakes were connected by a now-extinct river channel known as the Old River Bed with overflow from Lake Gunnison flowing north into the Great Salt Lake

Basin. Lake Gunnison had stopped overflowing north by 10,000 years ago, with the lake continuing to receive water flow from the Sevier and Beaver rivers.

Human behavioral strategies during this period are commonly ascribed to the Paleoindian period (12,000 to 7000 B.P.) and the most recognized diagnostic artifacts associated with this period are relatively large, lanceolate and fluted points such as Clovis and Folsom. Although relatively sparse, the archaeological record from the Paleoindian period suggests that human populations were low, highly mobile, and appear to have focused on hunting large mammals. The idea that Paleoindian groups focused on big game hunting is largely due to the discovery of diagnostic artifacts in excavated contexts and in association with large mammal remains. The majority of these sites are located in the Southwest and Plains regions. Sites associated with the Paleoindian period are commonly found in low valley settings associated with pluvial lakes, marshes, or deltas; on Pleistocene river or stream terraces; and on old elevated surfaces on valley margins (Jones et al. 2003; Madsen 1982; Oviatt et al. 2003; Schmitt et al. 2007; Willig and Aikens 1987).

Archaic Period (5000 B.C. to A.D. 300)

In North America, a general shift toward a more arid and warm climate occurred at the terminal Pleistocene/early Holocene transition. This climate shift, in turn, caused the retreat of continental glaciers and changes in flora and fauna. In the Great Basin, many of the shallow lakes and associated marshes present during the Pleistocene began to desiccate. Forests migrated upslope to higher elevations, lower elevations became increasingly populated with arid plant species, and pinyon pine woodland began expanding. Numerous species of large mammals also went extinct and were increasingly replaced by medium- and smaller- sized mammals. Although desiccation occurred at different times and places in the Great Basin, the era of bio-productivity associated with shallow lakes and marshes was generally over by about 7,500 years ago (Grayson 1993). Humans adapted to the changing climates and resources and the new cultural pattern is commonly termed the Archaic Period (5000 B.C. to A.D. 300).

During the early part of the Archaic Period, human occupation appears to have concentrated in valley bottoms, near remaining water sources. By the middle to late Archaic, resource distribution in the Great Basin had become patchy, with highly productive areas separated by large, sparse environments. During this time, there is a general movement into upland areas, although wetland areas were still utilized where present (Madsen 1982:213–216). The distribution of food resources in the eastern Great Basin resulted in constant population movement, the use of a wide array of food resources, and hunting and gathering within seasonal rounds. Human lifestyles during this period, then, are relatively diverse and sites are found in a variety of geographical and environmental settings.

Formative Period (A.D. 300 to 1200)

By A.D. 300, the archaeological record suggests a shift toward horticulture and more sedentary lifeways across large portions of the Great Basin and surrounding areas. This intensification process is indicated by an expansion of permanent architecture and an increase in the size, frequency, and complexity of related food storage structures. The Sevier Lake region is located north of the commonly accepted boundary between two cultural groups dated to this period: the Anasazi and Fremont. No Anasazi-period sites are known within the proposed potash leasing area, although several are located to the south in Beaver County. Fremont sites are known in the project area and surrounding region.

Current research has focused on clarifying Fremont reliance on foraging and agriculture and the relationship between more sedentary Fremont groups and their hunting and gathering neighbors (Madsen and Simms 1998:322). Generally, the Formative period in the area is best characterized by a variety of occupation types and high potential exists for clarifying Fremont behavior in the area.

Late Prehistoric Period (A.D. 1200 to 1776)

The Late Prehistoric period (A.D. 1200 to 1776) follows the Formative period and is characterized by the appearance of Numic populations in the region. During this period, the archaeological record indicates the apparent abandonment of intensive-level farming and a return to a more mobile hunting and gathering based economy. At the same time, small triangular arrow points (e.g. Desert Side-notched and Cottonwood Triangular) and relatively crude brownware pottery, called Intermountain Brownware or Shoshonean Ware, are first present in the region. The expansion of non-farming, Numic-speaking groups is commonly cited as the cause of these changes in the material record. This "Numic expansion" theory proposes that Numic language speakers moved into the Great Basin and portions of the southwest from the Mojave Desert area (Bettinger and Baumhoff 1982; Madsen and Rhode 1994). This move may have been due, in part, to a severe drought in the Mojave Desert late in the prehistoric sequence (Sutton 1994; 1996). Whether the changes noted in the archaeological record of this period represent a complete replacement of indigenous populations by newcomers, the absorption of indigenous populations into new linguistic and cultural groups, or cultural change by indigenous populations remains an open debate (see Aikens and Witherspoon 1986).

Historic Period

Early Euro-American Exploration (A.D. 1776 to 1847)

The first known Euro-American exploration in the area that would become Millard County occurred in 1776. In the fall of that year, while searching for an overland route to California, a small expedition led by Spanish priests Francisco Dominguez and Silvestre de Escalante passed through Scipio Pass, south to Pahvant Butte and Clear Lake, and then continued to a point near Sevier Lake before returning to New Mexico. Spanish traders

followed on the heels of Dominguez and Escalante, and during the early 1800s several Spanish trade expeditions reportedly passed through the area while traveling to Utah Valley to conduct trade with Ute Indians. In 1826, Jedediah Smith and a small group of trappers entered and explored the Millard County area while searching for suitable trapping grounds. Smith and his party made their first expedition through the northeastern corner of Millard County by following the Sevier River and then passing through Clear Creek Canyon near Cove Fort. Other small groups of trappers and traders also frequented the area during the 1820s and 1830s. In 1843, U.S. Army topographical engineer John C. Fremont explored and mapped large portions of Utah, including the eastern region of Millard County.

Early Settlement (A.D. 1847 to 1868)

Large-scale settlement of Utah began in 1847, when, under the guidance of Brigham Young, a large group of Mormon pioneers left the Midwest to escape religious persecution. Shortly after the arrival of Mormons in the Salt Lake Valley, Brigham Young sent Parley Pratt to explore the southern areas of the Utah Territory to identify suitable areas for additional settlements. Information gathered from this expedition helped establish Millard County and Fillmore City at Chalk Creek, both in late 1851. Fillmore was the first settlement in Millard County and, because of its central location, was also the territory's capital until 1856.

Mormon settlers and native tribes already living in the area initially established a good rapport. The continual loss of traditional hunting and gathering lands, however, led to a series of retaliation killings between the two groups and the outbreak of the Walker War in 1853 and Black Hawk War in the mid- to late-1860s. Although peace agreements were brokered in both cases, tensions were generally high between native and emigrant groups. While conflict was on-going, Mormon settlers retreated to several forts established in the area and abandoned fledgling settlements. After the end of open hostilities, Mormon settlements were re-occupied and populations began to grow rapidly.

Within Millard County, sheep herding was initially the primary focus of livestock operators. The number of sheep raised in the county increased significantly in the last two decades of the nineteenth century. In 1880, there were approximately 4,000 sheep; by 1890, the number of sheep in the county had grown to over 48,000. At one point in Utah's history, Millard County was second only to Tooele County in number of sheep grazing on its ranges (Murphy 1994:366).

In addition to sheep, cattle were common throughout Millard County. Several Texans trailed longhorn cattle through Millard County during the 1860s. During the late 1800s, several Mormon wards organized cooperative cattle herds, with cooperative cattle roundups routinely conducted throughout the county. In 1870, several local residents formed the Millard Cooperative Horse and Stock Raising Company. By 1872, the group was raising cattle in Millard County and selling their stock under contract to the then-thriving mining town of Pioche, Nevada. Because of increasing cattle rustling during the 1870s, Millard County cattlemen also organized themselves into livestock protective

associations. By around 1870 the cooperative movement had ended. Between the mid- to late- 1800s, the Utah ranching industry had been largely unregulated with no single government agency supervising ranching activities. As a result, rangeland in Millard County was grossly overgrazed for decades. After the establishment of the Fish Lake National Forest around 1900, grazing permits were required for livestock grazing in the national forest of the Pahvant Range, introducing the practice of range management to the county (Lyman and Newell 1999:136–137).

Though agriculture and ranching were the primary economic pursuits in Millard County, other business ventures also became profitable in the late 1800s. The communities of Meadow, Holden, Scipio, Fillmore, and Oasis established profitable dairy creameries beginning around 1900. Mining, too, improved the area’s economy. Between the 1880s and 1890s, the Leamington Mining District enjoyed some success producing silver and lead ore (Lyman and Newell 1999:170–171). The San Francisco Mining District, located west of Millard County, and the Detroit (now Drum Mountain) Mining District, located just across the Juab County line, also brought economic benefits to Millard County. Economic prosperity brought about by agriculture, ranching, and mining, provided funding for civic and infrastructure developments within the county.

Telephone and telegraph service made their way into Millard County in the late-1800s and early-1900s. Electrical service was extended into most parts of Utah beginning around 1915. Transportation—specifically railroading—also benefited the development of Millard County’s economy and improved the quality of life for area residents. Railroading in Millard County began when the Central Pacific and the Union Pacific railroads completed the first transcontinental rail line in 1869. By 1870, construction was complete on the Utah Central Railroad, connecting Salt Lake City to the transcontinental line. Rail lines were the beginning of a network that eventually connected Utah to the national railroad network. The new rail lines improved travel, increased access to goods not previously available, and benefited the area’s economy by providing a more efficient and economical means of transporting local products to national markets.

In 1907, Utah created a state highway system; in that same year, the pioneer road connecting Salt Lake City with southern Utah was included in the highway network. Beginning in 1910, road improvements were made in the county’s towns. After 1918, the federal government also provided funds for highway construction. As a result of federal funding, the Millard County Highway Commission graveled and graded a road—later designated U.S. Highway 91—from Scipio to the Juab County line and from Holden to the Beaver County line. In 1952, U.S. Highway 6 was completed across Millard County from just north of Lynndyl to the Nevada border north of Garrison.

World War I and the Great Depression (1917 to 1940)

By the turn of the century, a strong economy had been established in Millard County based on agriculture, ranching, and, to a lesser degree, mining. The entry of the United States into World War I in 1917 furthered the county’s already healthy economy. New demands brought about by the war effort led to new demands for beef, wool, and

agricultural produce also caused price increases for area ranchers and farmers. However, at the end of World War I in 1918, the high demand for goods declined, causing an economic downturn in national and local economies. During the mid-1920s, the economic situation worsened until, in 1929, the national stock market crashed, the country's economy failed, and the Great Depression began.

The Depression caused significant changes in agricultural practices. Because of declining crop prices, farmers raised more livestock and fewer crops during the 1930s. There was additionally a decline in the number of farms in Millard County and multiple small-scale farms were often consolidated into a fewer number of large farms. The Depression also impacted area ranchers. In the years prior to the Depression, the government had taken few steps to regulate grazing on public lands and, as a result, large-scale ranchers effectively controlled prime pastureland in the county. To regain control of public grazing land and improve livestock range management, the federal government passed into law the Taylor Grazing Act in 1934 (Lyman and Newell 1999:298), which created numerous grazing districts across the west and implemented fees for the use of public grazing lands. Because beef and wool prices were at unprecedented lows during the Depression, numerous area ranchers could not afford grazing permits for public lands and were forced to sell their herds. Many ranchers were able to purchase new animals and re-enter the ranching industry after the economy improved.

During the early 1930s, various relief efforts were initiated to lessen the effects of the depression. Initially, private organizations such as the Red Cross, local churches, and various civic organizations conducted relief efforts. In late 1933, as part of President Roosevelt's New Deal, the government established several federal aid programs. In addition to social welfare programs, several work relief programs were implemented, most notably the Works Progress Administration (WPA) and Civilian Conservation Corps (CCC). The goal of these programs was to provide work for the unemployed and stimulate the country's economy. In Millard County, several roads, culinary and irrigation water systems, community buildings, Milford Flat parks, and recreational complexes were built or improved through WPA or CCC labor. Six CCC camps at Kanosh, Garrison, Fillmore, Black Rock, Antelope Springs, and Deseret Range provided corpsmen for work on a new ranger station and recreation facility at Kanosh, a reservoir near Fillmore, several flood- and erosion-control projects, and range improvement projects in various areas of the county.

Known Cultural Resources in the Proposed Potash Leasing Area

Results from the Class I file search indicate there have been 17 previous cultural resource inventories within a one-mile perimeter of the proposed potash leasing area. These projects are related to minerals development, utilities development, recreational signage, highway fencing, and archaeological excavation. While a single linear inventory was conducted which extended into the dry lake bed, the great majority of the proposed potash leasing area has not been surveyed for cultural resources. As noted above, twenty-

five previously recorded archaeological sites are present in the study area (within one-mile of the proposed potash leasing area, see **Table 3-4**). All of these sites are located along the northeastern margins of Sevier Lake near the mouth of the Sevier River; 15 of these sites are located within the boundary of the Sevier Lake potash leasing area, 10 are located on lands outside the leasing area. The 15 sites within the leasing area include 14 prehistoric lithic scatters and one prehistoric artifact/feature scatter with burial. A total of nine sites are unevaluated for the NRHP, four are NRHP-eligible, and two of these sites have been recommended ineligible for the NRHP.

Cadastral plats/General Land Office (GLO) maps of the area were also reviewed for historic features, such as roads, ditches, structures, and trails. A review of the historic maps indicated the presence of a ditch and road near the northeast end of Sevier Lake in 1892 within T20S R10W. However, these are outside of the proposed potash leasing area.

The limited cultural resource sites and survey data in and around the proposed potash leasing area, does not support site density estimates in unsurveyed areas. Roughly 690 acres of survey has been conducted within one mile of the proposed potash leasing area. While some of the recorded sites are associated with these surveys, most of the sites located near the lake were reported by the University of Utah between the 1940s and 1960s, and are not associated with known survey projects. A relatively large number of archaeological sites are known near the mouth of the Sevier River along the northeastern edge of the lake, including an Archaic Period burial. Therefore, there is high potential to encounter additional sites if development activities are proposed on the northeastern side of the lake and likely low to high potential to encounter sites in other portions of the leasing area.

Table 3-4 Previously Recorded Cultural Resource Sites within 1 Mile of the Sevier Lake Competitive Potash Leasing Proposal

Site Number	Site Type	Eligibility
42MD3*+	Prehistoric Lithic Scatter	Unevaluated
42MD4*+	Prehistoric Lithic Scatter	Unevaluated
42MD5*+	Prehistoric Lithic Scatter	Unevaluated
42MD6*+	Prehistoric Lithic Scatter	Unevaluated
42MD31*+	Prehistoric Lithic Scatter	Unevaluated
42MD32*+	Prehistoric Lithic Scatter	Unevaluated
42MD33*+	Prehistoric Lithic Scatter	Unevaluated
42MD58*	Prehistoric Lithic Scatter	Unevaluated
42MD59*	Prehistoric Lithic Scatter	Unevaluated
42MD68	Prehistoric Lithic Scatter	Unevaluated
42MD526*	Prehistoric Lithic Scatter	Eligible
42MD527*	Prehistoric Lithic Scatter	Eligible
42MD528*	Prehistoric Lithic Scatter	Eligible
42MD551*	Prehistoric Lithic Scatter	Not Eligible
42MD598	Prehistoric Lithic Scatter	Not Eligible
42MD604	Prehistoric Lithic Scatter	Not Eligible
42MD1053*	Prehistoric Artifact/Feature Scatter and Burial	Eligible
42MD1063	Prehistoric Lithic Scatter	Eligible
42MD1098	Prehistoric Lithic Scatter	Eligible
42MD1099	Prehistoric Lithic Scatter	Eligible
42MD1103	Multi-component Historic/Prehistoric Artifact Scatter	Eligible
42MD1104	Prehistoric Lithic Scatter	Eligible
42MD1113*	Prehistoric Lithic Scatter	Not Eligible
42MD1419	Prehistoric Lithic Scatter	Not Eligible
42MD1420	Prehistoric Lithic Scatter	Not Eligible

*Located within Alternative A

+Located within Alternative C

3.3.3 Livestock Grazing

Livestock grazing is a primary land use in the area around Sevier Lake, although the lake itself is not managed for grazing due to lack of forage. The Sevier Lake proposed potash leasing areas include the corners of several allotments (**Figure 4**). An allotment is an area of public land where one or more livestock ranchers graze their cattle or sheep for a fee, subject to stipulations regarding the number of livestock, days on the allotment, and season of use, with the management goal of maintaining the desired level of productivity and properly functioning ecological conditions (BLM 2009).

Roughly 8,000 acres of the proposed leasing areas would fall within the edges of eight allotments (all eight allotments cover a total of 601,300 acres; the 8,000 acres comprises 1.3 percent of this total) that surround Sevier Lake. The allotments are listed below in **Table 3-5**. The allotment boundaries, relative to the Sevier Lake potash leasing areas, are shown in **Figure 4**.

Table 3-5 Livestock Allotments within the Potash Leasing Area

Allotment		Allotment Type and Season of Use
1	Deseret (05775)	Cattle 5/1 – 11/30
2	Seely (95787)	Sheep 10/16 – 4/15
3	Coates (05781)	Sheep 11/1 – 4/30
4	Wheeler (05790)	Sheep 11/16 – 4/30
5	Crickett (05779)	Sheep 10/15 – 4/30
6	Crystal Peak (05779)	Sheep 10/16 – 4/30
7	Steamboat (04336)	Sheep 11/1 – 4/30
8	Skull Rock (04334)	Sheep 11/1 – 4/30

Information from BLM 1986, BLM 1987

Allotment lands that fall within the outline of the proposed potash lease area support very sparse vegetation with poor forage value, due to the low elevation, aridity and proximity to the salty Sevier Lake playa. Stocking rates are low and livestock tend to graze areas away from the lakebed where forage is better. Vegetation next to the lake is salt-desert shrub, but grades to sagebrush and grass as elevation increases (Woods et al. 2001).

Grazing on most of these allotments occurs between late fall and early spring. There are no fences separating allotments from the lake, or between the allotments, on lands

immediately surrounding the lake. No seedings have taken place and no range fires have occurred in recent history within the immediate basin surrounding Sevier Lake.

Water resources are vital to successful livestock grazing on the arid lands around Sevier Lake. Several stock watering locations are located near or within the proposed lease area. These include point-to-point stock watering rights on the Sevier River near its terminus, small stock-watering reservoirs that capture runoff that would otherwise flow to Sevier Lake, springs/seeps that issue from the Cricket Mountains immediately east of Sevier Lake and three deep wells located to the south and southwest of the lake. Water resources and water rights are discussed in more detail in **Section 3.3.7**.

3.3.4 Migratory Birds

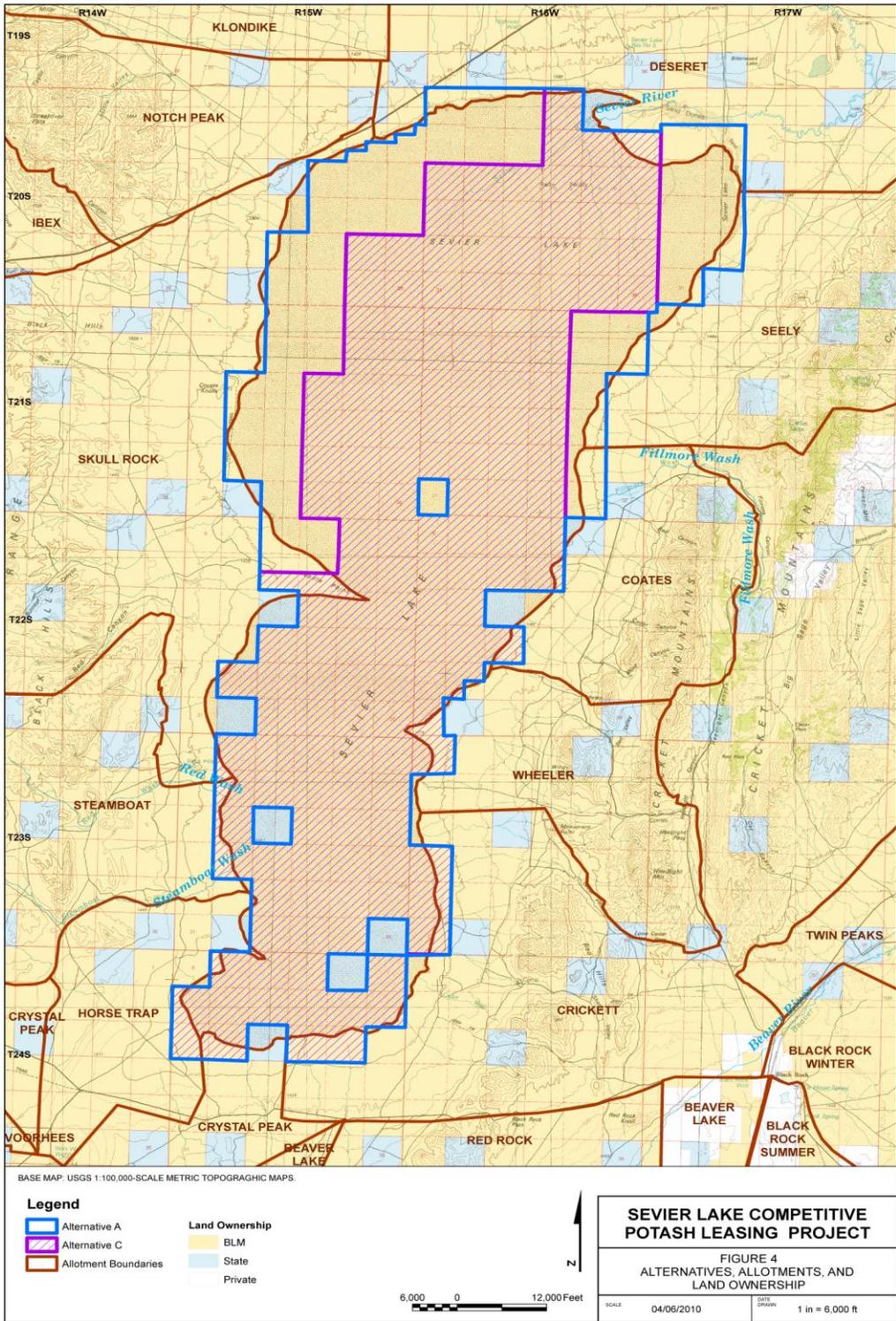
The Migratory Bird Treaty Act of 1918 (MBTA) implemented the 1916 convention between the U.S. and Great Britain for the protection of birds migrating between the U.S. and Canada. Similar conventions between the United States and Mexico (1936), Japan (1972) and the Union of Soviet Socialist Republics (1976) further expanded the scope of international protection of migratory birds. The MBTA made it illegal for people to "take" migratory birds, their eggs, feathers or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. Migratory birds include types of native birds from songbirds to raptors, or birds of prey, such as hawks, owls, and eagles. The Bald and Golden Eagle Protection Act affords additional protection to all bald and golden eagles (USFWS 2010). The USFWS has also issued technical guidance for inventory and monitoring of golden eagles to evaluate their use of various habitats (USFWS 2010a). Utah and other western states are part of a general area comprising the Pacific flyway, which is a major migration route for waterfowl in the United States, Canada and Mexico. In the early 30's, waterfowl biologists used band returns and other information dating back to the early 1900's to help identify primary waterfowl migration routes, such as the Pacific Flyway, which link breeding grounds in the north to more southerly wintering areas (USFWS 2010).

The Sevier Lake potash leasing area is within the southeastern corner of the Great Basin Bird Conservation Region (BCR 9). The Birds of Conservation Concern (BCC) list (USFWS 2008) for the Great Basin Region is part of the USFWS effort to carry out the 1988 mandate under an amendment to the Fish and Wildlife Conservation Act to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973". The BCC list for BCR 9 includes 28 species of birds including ferruginous hawk, golden eagle, peregrine falcon, green-tailed towhee, brewer's sparrow, and others (see list included in **Appendix D**). Some of these birds are also designated as BLM sensitive species (see below).

The WSRA RMP identifies crucial raptor nesting areas, two of which are designated near the Sevier Lake potash leasing area. One crucial raptor nesting area is in the Cricket Mountains, about 8 to 10 miles to the east of the eastern edge of Sevier Lake; the other is,

at its closest point about 1-2 miles from the northern end of Sevier Lake, and extends northeasterly along Highway 6. These areas are classified as Category 2 for fluid mineral leasing, and ORV use is limited to existing roads and trails to prevent significant disturbance to nesting raptors from March 1 through June 30 (BLM 1987).

Figure 4 – Sevier Lake Area Land Status and Range Allotments



The 1997 Plan of Operations, Sevier Lake Project (Salada 1997) notes that there were some residing golden eagles and wintering bald eagles near the Black Rock Pass area. The 1998 EA on rights of way for Salada's ponds, ditches, dikes, roads, and power lines described the existing environment of Sevier Lake as 'a large mud lake'. The list of wildlife species known to frequent the surrounding area at that time included several migratory birds: prairie falcon, rough-legged hawk, horned lark, killdeer, avocet, eared grebe, and a variety of shorebirds (BLM 1998).

There are several raptors designated as BLM sensitive species in the FFO area. An area west of Fillmore is known to be a migratory bird flyway. The Utah Division of Wildlife Resources Utah Natural Heritage Program (UNHP) database was consulted to determine the most recent recorded observations of these raptors in or near the Sevier Lake leasing area. The UNHP dataset displays occurrences that are originally mapped at a scale of 1:24,000, and are then depicted as their representative 7.5 minute topographic quad map. Four of these sensitive raptors were listed on the UNHP database results, as noted below. Those that may occur in the vicinity of the Sevier Lake leasing area or may utilize off-lease rights-of-way are described in the following paragraphs.

Bald eagles and golden eagles may occur in the vicinity of Sevier Lake. Bald eagles use the general area for wintering, and golden eagles may use the general area yearlong. There is no prey base habitat for raptors on the Sevier lakebed. Small rodents and other small birds or reptiles (prey for raptors) are likely to be present in the upland areas in shrub habitat, and on the slopes outside of the leasing area. The 1997 Plan of Operations, Sevier Lake Project references the 1987 BLM assessment of Crystal Peak's project, which notes that wildlife near the lake consisted of antelope, rodents, and reptiles. Brine flies and brine shrimp were present in and about the flooded playa surface at the time of this study (Salada 1997).

Ferruginous hawks occupy grasslands, sagebrush, salt-desert, and other shrublands, and edges of pinyon-juniper woodlands; they may become locally abundant at shrub-steppe and pinyon-juniper ecotones. They may forage in the Sevier Lake leasing area. According to the UNHP database, this species was observed in 1997 in several of the 7.5-minute Quad map areas that cover the Sevier Lake proposed leasing area.

Northern goshawks occur in Utah principally in montane conifer-aspen forest (to tree-line), where thick stands of conifer and aspen groves near permanent water are favored nesting sites; occasionally they are found in narrow-leaf cottonwoods along streams in lower valleys. Although the species was observed in the Sevier Lake SW Quad area in 1983, according to the UNHP database, there is no suitable habitat for this species in the Sevier Lake leasing area.

Northern harriers may utilize the general area for hunting small mammals or birds. Northern harriers typically inhabit open areas including grassland, wetland, agricultural land and steppe habitats.

Burrowing owls may utilize the general area for foraging and nesting. Their natural habitats are open grassland and prairies, but they also utilize other open situations. They eat mainly terrestrial invertebrates, but also consume a variety of small vertebrates, including small mammals, birds, frogs, toads, lizards, and snakes. Burrowing owls are obligate burrow nesters, and utilize burrows dug by prairie dogs, badgers, and ground squirrels, but they are largely dependent on prairie dog burrows in Utah (UDWR 2007). According to the UNHP database, this species was observed in the Long Ridge SW Quad area in 1990.

The Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbance (Guidelines) (USFWS 2002) provide a detailed summary of measures required for consistent raptor management and protection state-wide. Eight of Utah's raptors are considered to be Special Status Species by the BLM, and currently receive enhanced protection, in addition to the regulatory authority provided by the MBTA (BLM 2006). Those with the potential to occur in the Sevier Lake area are described in **Section 3.3.9**. The BLM has prepared specific management recommendations for implementation of the Guidelines, including Best Management Practices (BMPs) which would be attached as Conditions of Approval to future potash lease development scenarios, should those proposed activities have the potential to adversely affect nesting raptors, or cause occupied nest site to become unsuitable for nesting in subsequent years (BLM 2006).

3.3.5 Socio-Economics

Region of Study

For the purposes of this study it was assumed that workers, both for construction and operations, would reside within approximately 40 miles of the centerline of Sevier Lake. Given the few direct high-speed roads in the area, that translates to a maximum commute of an hour or less. This buffer included parts of five counties, but for Juab, Sanpete and Sevier counties, there were no towns within the buffer zone. Therefore, the socioeconomic analysis was limited to Millard and Beaver counties. Towns that fell within the buffer included Woodrow, Hinckley, Delta, Harding, Holden, Greenwood, Fillmore, Meadow, Kanosh, Eskdale, and Black Rock in Millard County, and Manderfield, Beaver, Greenville, Adamsville, Minersville, and Milford in Beaver County. While it is possible that some influence would be felt further distances from the potential project site, concentrating the impacts is a more conservative approach.

Population

Table 3-6 shows population by county and town for Millard and Beaver counties as well as for the State of Utah. Compared to the State, Millard and Beaver counties have seen slow growth (or lost population, using the Census Bureau estimates); in the case of several of the cities and towns in those counties there has been a reduction in population. The Utah Governor's Office of Planning and Budget (OPB) estimates substantially higher population growth than the Census Bureau (OPB 2010) counted since the 2000 census.

Table 3-6 Population Estimates for Millard County, Beaver County, the State of Utah, and Select Towns in Millard and Beaver counties

Location	2000 Census	2008 U.S. Census Bureau Population Estimate	Percent Change, 2000-2008	2009 Population Estimate (OPB)
State of Utah	2,233,204	2,736,424	22.5	2,800,089
Millard County				
Millard County	12,405	12,082	-2.6	13,702
Delta	3332	3172	-4.8	
Fillmore	2253	2136	-5.2	
Hinckley	698	708	1.4	
Holden	400	372	-7.0	
Kanosh	485	470	-3.1	
Meadow	254	237	-6.7	
Beaver County				
Beaver County	6005	6162	2.6	6,576
Beaver (city)	2482	2597	4.6	
Milford	1451	1399	-3.6	
Minersville	817	817	0.0	

Sources: U.S. Census Bureau 2010 OPB 2010

The average household size is 3.14 persons in the State of Utah, 3.19 persons in Millard County and 2.93 persons in Beaver County (USCB 2010). Average family size is 3.63 persons in the State of Utah, 3.66 persons in Millard County and 3.42 persons in Beaver County (USCB 2010).

Agriculture

Millard County is known for agricultural production; according to the General Plan, Millard County is ranked first of Utah counties in alfalfa hay production and fifth in total acres planted. A majority of the lands surrounding Delta, Hinckley, Fillmore, Meadow, and Kanosh are zoned Agriculture 20 or Agriculture; the purpose in these areas is to encourage and preserve prime farmlands (Millard County 1998).

Housing

Table 3-7 shows housing and housing occupancy statistics for the study region. The most recent data available for cities and towns are from the 2000 Census and do not reflect changes in the housing market or population since 2000. For example, in Millard County there is an estimated increase of 7.4 percent in the total number of housing units in 2008

(**Table 3-7**) and an estimated decrease in population for 2008 (**Table 3-6**) according to the Census Bureau, which would indicate an increase in unoccupied housing. On the other hand, the OPB (2010) estimates a population increase in Millard County (2000-2009, in **Table 3-6**) of 10.5 percent.

Table 3-7 Housing and Occupancy in the Study Area

Location	Housing Units 2000 Census	Occupied Housing Units, 2000 Census	Vacancy Rate on Rental Housing 2000 Census	Estimated Housing Units 2008, Census Bureau
State of Utah	923,373	834,483		944,347
Millard County				
Millard County	4,522	3,840	7.7	4,857
Delta	1,106	1,006	7.9	
Fillmore	823	732	7.7	
Hinckley	245	218	12.9	
Holden	162	140	11.1	
Kanosh	214	165	4.2	
Meadow	124	94	0.0	
Beaver County				
Beaver County	2,660	1,982	19.5	2,908
Beaver (city)	1,021	856	20.9	
Milford	589	484	17.0	
Minersville	274	256	7.1	

Source: U.S. Census Bureau

Anecdotally, a series of economic developments, including the Milford Wind Farm now entering Phase II of construction, have made it difficult to find housing available for rent or sale in the Town of Milford (personal communication, Monica Seifers, Milford Town Clerk, on April 6, 2010). Milford is the town closest to the south end of the lake and a likely location for production facilities, offices, and rail load-out facilities.

Schools

Fall 2009 public school enrollment was 2,820 for the Millard County School District and 1,600 for the Beaver County School District (OPB 2010). This represents a decrease of 75 students (-2.6 percent) from 2006 for Millard County and an increase of 36 students (2.3 percent) for Beaver County for the same period (OPB 2010).

Economics

Differences among the economies of Utah and the two counties are demonstrated by industry employment for 2008. The top five non-farm industry groups by employment for the State are Trade, Transportation and Utilities (19.8 percent); Government (16.9 percent); Professional and Business Services (12.9 percent); Education and Health Services (11.7 percent); and Manufacturing (10.0 percent). The same statistics for Millard County are Trade, Transportation and Utilities (32.5 percent); Government (27.8 percent); Leisure and Hospitality Services (9.3 percent); Professional and Business Services (8.5 percent); and Education and Health Services (8.0 percent). Mining was the eighth industry with 2.3 percent of non-farm employment in Millard County. For Beaver County the top five industries by percent were Government (34.1 percent); Trade, Transportation and Utilities (26.5 percent); Leisure and Hospitality Services (16.8 percent); Construction (6.6 percent); and Mining (4.2 percent) (OPB 2010).

Trade and government were first or second for each entity, but the industry rankings varied substantially below that. Industrial, manufacturing, and mining operations generally increase the property tax base more than other economic sectors.

Employment

The State of Utah has shared in the recent national economic downturn, but fared better than the national average. **Table 3-8** shows employment statistics for the U.S., Utah, Millard County and Beaver County. The most recent data for the counties is the 2008 annual average (USBLS 2010).

Table 3-8 Employment Statistics

Statistic	Millard County	Beaver County	Utah	U.S.
2008 Average Annual Civilian Labor Force	6,104	3,130	1,383,743	
2008 Average Annual Total Employed	5,907	3,025	1,336,156	
2008 Average Annual Total Unemployed	197	105	47,587	
2008 Average Annual Unemployment Rate	3.2	3.4	3.4	
2009 Average Annual Unemployment Rate			6.6	9.3
January 2010 Unemployment Rate			6.8	9.7

Sources: OPB 2010
U.S. Bureau of Labor Statistics 2010

Personal Income

For 2008 Millard County had total personal income of \$322.5 million and per capita personal income of \$26,693 (OPB 2010). For the same year, Beaver County had total personal income of \$173.3 million and per capita personal income of \$28,124 (OPB 2010). The statewide per capita personal income for 2008 was \$28,196 (OPB 2010).

Taxes, Fees, and Government Receipts

Utah has a complex tax structure that includes a combination of income taxes, sales and use taxes, and property taxes, as well as special purpose and local option taxes. In addition, fees are required for all vehicles registered and licensed in the state.

3.3.6 Visual Resources

In order to meet its responsibility under Section 102(a)(8) of the FLPMA to maintain the scenic values of the public lands, BLM has developed a Visual Resources Management (VRM) system that addresses the variable levels of scenic value in the landscape, and how to assess and manage these areas. BLM's VRM system also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. The visual inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using BLM's visual resource inventory process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. The process is described in detail in BLM Handbook H-8410-1, Visual Resource Inventory. The results of the visual resource inventory become an important component of BLM's RMP for the area. VRM classes assigned to the landscape vary from Class I – the most scenic or sensitive and thus preserved, to Class IV – which provides for management activities that may require major modifications to the landscape.

As described in the RMP FEIS (BLM 1986), the eastern portion of the WSRA including the Cricket Mountains and Sevier Lake, is 'characterized by broad, open valleys interspersed with rolling hills and moderately high mountains.' The mountain ranges are described as limited in variety of rock, soils, and vegetation types, and Sevier Lake was noted as having little vegetation around the periphery. The Cricket and San Francisco ranges, as well as Sevier Lake, were assigned VRM Class IV. VRM Class II and Class III areas closest to the Sevier Lake leasing area are Notch Peak (Class II) and portions of the House Range, several miles to the west and northwest of the northern end of Sevier Lake. The views from Notch Peak (over 9,600 feet elevation) are noted to include the expanse of Sevier Lake, as well as the Cricket Mountains beyond, U.S. Highway 50 & 6, and various other peaks in the region. For further reference, see websites such as 'Hiking Notch Peak – Utah Desert Climbing' (http://www.willhiteweb.com/utah_climbing/western_desert/notch_peak_280.htm).

Although the leasing area is assigned VRM Class IV, a recent visual inventory suggests that the area may fall under visual resource inventory Class III. As shown in the photos in **Sections 3.2** and **3.3.1**, the Sevier Lake leasing area is fairly remote and undeveloped.

Traffic through the area would mainly traverse on the northern end of the lake on U.S. Highway 50 & 6. State Highway 257 is on the east side of the Cricket Mountains and does not provide views of the leasing area. Less used gravel roads access the southern end of the lake. The town of Milford is located at over 20 miles to the south of the south end of Sevier Lake. The town of Delta is located over 25 miles from the northern end of Sevier Lake.

3.3.7 Water Resources including Floodplains

Sevier Lake is a playa located within the Basin and Range physiographic province. Although positioned within the arid environment of the Sevier Desert and dry most of the year, in 1987 after several years of unusually high runoff, it was labeled Utah's third largest waterbody (BLM 1987). Currently, and by definition, however, it is a playa – or dry lake bed. The Sevier Lake watershed area is approximately 16,000 square miles (Wilberg 1996). The playa is a normally dry terminal lake fed primarily by the Sevier River. It is approximately 27 miles long and extends up to 12 miles wide near its northern end (BLM 1987). Sevier Lake is bounded on the east by the Cricket Mountains and on the west by the House Range, which is fronted by the Black Hills. In the current climate regime and with existing upstream water uses, the lakebed is only inundated during periods of high runoff. In June of 1985, the lake reached a depth of 13 feet, which appears to be the maximum on record (Wilberg 1996); the water depth resulting from more normal flood events would be substantially less than this record depth.

On average, annual precipitation at Sevier Lake is about 9.3 inches (based up long term weather records at Black Rock, approximately 10 miles east of the lake (WRCC 2010)). The variability in annual precipitation from year to year can be +/- 40 percent. According to the WSRA RMP (BLM 1987) the majority of the precipitation in this area falls in late summer and early autumn, with spring being the second wettest time of the year. Potential evaporation rates are much higher than precipitation rates in this part of Utah. The Western Regional Climate Center (WRCC 2010a) reports that average annual pan evaporation at Milford, which is about 25 miles southeast of Sevier Lake, is approximately 78 inches. Free water lake evaporation would be less than pan evaporation, though still much higher than the precipitation rate.

Surface Water Flow and Quantity

The very low precipitation-to-evaporation ratio is only minimally responsible for the above-noted fact that the playa is usually dry. Although the Sevier River has a large drainage area, which includes mountainous headwater tributaries that receive much more precipitation than occurs at the lake, it is one of the Nation's most highly utilized river systems (UDWR 1999). The majority of the utilization is related to agriculture. Streamflows reaching the lake have diminished since the late 19th century due to irrigation withdrawals, and significant inflow to the lake has occurred only rarely since then (Wilberg 1996). According to the State Water Plan (UDWR 1999), "...four percent or an average of about 32,900 acre-feet of the total tributary inflow reaches its terminus, Sevier Lake, and then only on an intermittent basis." Much of that four percent is

attributed to intermittent flood flows, irrigation drainage, and groundwater discharge. Further, the Sevier River channel itself from about Delta to the river's mouth at the lake inlet is generally dry (BLM 2008). Certain reaches have been observed to have a riparian corridor, but no hydric soils or wetland hydrology (Milford Wind Corridor, LLC 2008), providing additional evidence of the paucity of water reaching the lake. Overall, when and how much water enters Sevier Lake depends upon the interaction of climate, weather, and a complex water management/distribution system.

The Sevier River has been gaged by the U.S. Geological Survey (USGS) at numerous locations and for various time periods. Station No. 10224000, located near Lynndyl, is the furthest downstream gaging station that has a long-term record. At that location, the Sevier River's watershed area is 5,966 square miles; it increases to 9,950 square miles at its mouth. Numerous irrigation diversions reduce the quantity of water that flows in the river downstream of the Lynndyl gage (UDWR 1999) while irrigation return flows add some additional water back into the river system in that reach (Tetra Tech, Inc. 2004). The net effect appears to be a reduction in flow by more than 75 percent between the gaging station and the mouth of the Sevier River, on average, based upon water budgets constructed by the Utah Division of Water Resources (1999). As such, streamflow records obtained from this gaging station are not representative of streamflows entering the lake. However, based upon those records (USGS 2010b) flows in the Sevier River are quite variable, both seasonally and annually. Peak discharge normally occurs in May or June, and the river is generally at its lowest during the last three months of the year. Average annual flow at Station No. 10224000 (based on records compiled since 1943) is approximately 240 cubic feet per second (cfs), or 174,000 acre-feet/year (USGS 2010b). The highest flows of record occurred in June, 1983 and May, 1984 and were 5,020 and 4,810 cfs, respectively, as measured at the gaging station near Lynndyl. Because the Sevier River is so heavily regulated, a standard flood frequency analysis following the 17B guidelines (USIAC 1982) is not feasible. However, statewide, the 1983 and 1984 years saw numerous floods at or in excess of a 100-year return period due to the combination of snowpack accumulation, snow-pack water content, and high temperatures/spring rainfall (USGS 2010c).

The numerous ephemeral channels that drain the terrain surrounding the lake are not gaged. Only rarely would they be expected to convey runoff that reaches the lakebed. Further, such flows would inundate only a portion of the lake near the channel mouth; most of this accumulated water would likely evaporate, but some may infiltrate and contribute to shallow groundwater beneath the lakebed.

Geologic records indicate that Sevier Lake has been subject to cycles of playa (dry) and lake (wet) conditions, since at least the Holocene (Wilberg 1996). In historic and recent times, dry conditions prevail, in large part due to the previously mentioned intensive water use in the Sevier River basin. While detailed records on lake inundation have not been kept, some anecdotal observations are available. Wilberg (1996) reports that, in 1872, the lake had an inundation area of about 188 square miles but was nearly dry by 1880. Although water was probably present in the lake at least occasionally after 1880, it

appears likely that inundation levels did not reach the 1872 extent until almost 100 years later, in the 1980s. The maximum water elevation in historic times was in June 1985, when the lake reached an elevation of 4,527 feet (Wilberg 1996).

Floodplains

The Federal Emergency Management Agency (FEMA) is tasked with defining 100-year and 500-year flood zones, with a focus on communities that may have a need to determine flood risk for flood insurance purposes. As is common with undeveloped public lands, FEMA has not generated flood maps for Sevier Lake (FEMA 2010). Instead, the entire area of the lakebed and surroundings is denoted on the Flood Insurance Rate Map Index as being in Zone D, which is defined as “areas of undetermined, but possible flood hazards”. Thus, the 100-year floodplain associated with the Sevier Lake has not been officially determined. However, Executive Order 11988 requires agencies to consider the effects to floodplains, and alternatives to avoid such impacts, when analyzing proposed actions. Based upon definitions given in Section 6 of the Order, the floodplain associated with Sevier Lake would be the area below the elevation to which the lake would have a one percent chance of reaching in any given year, or in other words, the 100-year floodplain. The FFO has determined that the 1985 Sevier Lake inundation elevation (4,527 feet) is a reasonable approximation of the maximum extent of the 100-year floodplain. Thus, all of the Sevier Lakebed below that elevation (approximately 122,315 acres) is subject to the Executive Order.

Groundwater Occurrences

Due to its position at the terminal end of a large watershed area and within an alluvium-filled graben, Sevier Lake serves much more as a groundwater resource than a surface water resource. The Sevier Lake Graben provided a catchment for years of sediments and dissolved solids deposited by the Sevier River over geologic time, and these basin-fill deposits of up to 4,600 feet thick (Wilberg 1996) serve as a localized aquifer. This unconfined basin-fill aquifer has been informally subdivided into two units (Wilberg 1996): one zone, found at a higher elevation around the edges of the lake, includes coarser deposits than found within the other zone, which is found at the lower elevations closer to the lake bottom.

Groundwater of a more regional extent is present in the underlying consolidated carbonate bedrock. Dissolution of the carbonates along bedding planes, fractures, joints and faults has increased the overall permeability of this bedrock by enhancing secondary permeability (Wilbur 1996). These carbonate rocks are thought to comprise an extensive aquifer system underlying much of western Utah and eastern Nevada (Wilbur 1996). At the time of Wilbur’s (1996) report, it was not clear whether the carbonate-based bedrock aquifer in the vicinity of Sevier Desert and Sevier Lake represented a regional aquifer whose discharge was all within this area, or whether the aquifer was part of a larger regional carbonate aquifer system and thus had a substantial discharge component outside of the more local Sevier Desert/Sevier Lake area. Subsequent work by others, which is still ongoing, may help to define whether the Sevier Lake regional flow system is part of

the larger carbonate aquifer system that spans western Utah and eastern Nevada. The Basin and Range Carbonate Aquifer System (known as BARCAS) has been under study by several entities since 2007 (Welch et al. 2007), and includes Snake Valley to the west of Sevier Lake. The BARCAS studies were initiated in response to concerns about proposed groundwater withdrawals in eastern Nevada.

The basin fill and bedrock aquifers are thought to be hydraulically connected (Wilberg 1996). Their recharge comes from the surrounding mountains and alluvial slopes, as well as subsurface inflow from adjacent areas (Wilberg 1996). For example, the groundwater basin associated with the Sevier Desert, located north of Sevier Lake, has an estimated storage of about 2,000,000 acre-feet. This natural groundwater reservoir recharges the Sevier Lake area with an estimated 31,000 acre-feet annually (UDWR 1999). In addition, the consolidated rocks near the Milford area are thought to provide about 11,000 acre-feet annually (Wilberg 1996).

Groundwater discharge is less well defined. Although there appears to be a potential for the groundwater underlying Sevier Lake in the bedrock aquifer to flow out towards the Tule Valley, Wilberg (1996) considered the evidence of any significant amount of such movement to be unsupported. The previously mentioned BARCAS studies are not directly addressing this question, but they may provide indirect information that can help to better define groundwater discharge in the vicinity of Sevier Lake. However, it is known that groundwater in the upper parts of the unconsolidated aquifer discharges along the alluvial slopes that ring Sevier Lake, as wells as along the lower Sevier River (Wilberg 1996). Wilberg (1996) also indicates that groundwater in the consolidated aquifer discharges through upward leakage into the unconsolidated basin-fill aquifer.

Sole Source Aquifers

The Environmental Protection Agency (EPA) currently has identified three sole source aquifers in the State of Utah. They are the Western Uinta Arch Paleozoic Aquifer System at Oakley, UT, Glenn Canyon or Castle Valley Sole Source Aquifers (SSA) (EPA 2010a). An SSA is an underground water supply designated by the EPA as the "sole or principal" source of drinking water for an area (EPA 2010b). A review of the shape files of these aquifers using the BLM ARC GIS shows that none of these aquifers will be impacted by this potassium leasing action and RFD.

Water Quality

In general, water in the Sevier River degrades due to increasing salinity (or total dissolved solids (TDS)) as it makes its way downstream toward Sevier Lake. In part a function of natural geologic processes, salinity also increases in this part of the river due to agricultural practices (Tetra Tech, Inc. 2004). A close to 20-year period of records at a State of Utah monitoring station on the Sevier River near Deseret shows an average TDS of 2,445 mg/L, and a range between 340 and 4,386 mg/L (Tetra Tech, Inc. 2004). The average is well over the statewide 1,200 mg/L TDS standard given at U.A.C. R317-2, for the default standard for waters with agricultural beneficial uses, including stock watering

and irrigation. Therefore, the 2002, 2004, and 2006 303(d) lists all categorized the Sevier River from Clear Lake to Gunnison Bend Reservoir as impaired for TDS. However, as currently reflected in the Utah Water Quality Standards at U.A.C. R317-2, this stream reach now has a site-specific TDS criterion of 3,370 mg/L rather than the default 1,200 mg/L TDS standard. The reach of the Sevier River downstream of the Gunnison Bend Reservoir continuing to Sevier Lake has apparently not been listed as impaired, in spite of high TDS, because it is not used for irrigation and source water is primarily irrigation drains and return flow (Tetra Tech, Inc. 2004). It has not received a site-specific TDS criterion, though Tetra Tech, Inc. (2004) recommended one during the TMDL process.

Based upon the above-mentioned data, water flowing into Sevier Lake is at times low in dissolved solids and at times high in them. In any case, as water continues to reside in the lake, it becomes increasingly briny because salts are left behind as the water evaporates. The briny water eventually becomes supersaturated if additional inflows do not occur. Minerals precipitate as soluble salts. Additional dissolution of the lakebed minerals can also occur when sufficient water is present. These cycles of evaporation, precipitation, and dissolution have resulted in the groundwater under the lake becoming enriched (Wilberg 1996). A number of wells in and near the lakebed were sampled in 1987 and results were reported in Wilberg (1996). TDS in many of these wells (completed in the basin-fill aquifer) reached into the 10,000s and even the 100,000s. Wilberg's (1996) report also includes the major cations and anions that make up TDS and have a direct bearing on the types of salts that may be economic to harvest in Sevier Lake.

Water Rights

The lease parcels are predominantly within the Utah Division of Water Rights (UDWRi) Area 69. A very small portion of the parcels, near the mouth of the Sevier River, is within Area 68. More specifically, most of the parcels are within the 800-square mile part of Area 69 that is known as the Sevier Lake area sub-basin. The UDWRi defines water right policy by these Areas. Area 69 is covered by the Sevier River Decree and the Sevier River Basin Water Rights Policy (UDWRi 2010). Surface waters in the basin are considered to be fully appropriated and new filings are not allowed, with an exception in certain cases for quantities less than two acre-feet per year. Groundwater is considered to be a little more available for appropriation, particularly at depths greater than 600 feet. However in general, applications are still limited to very small quantities. There may be more availability for briny water associated with Sevier Lake, due to its position in the basin and the fact that its quality makes it unsuitable for most beneficial uses. However, recent applications for such waters have been protested (UDWRi 2010a).

BLM has filed on water rights for all sources within or originating on public land (BLM 1987). According to the UDWRi (2010a) online water rights database, this includes numerous rights valid by either diligence claims or approved certificates close to (within a couple of miles) Sevier Lake: point-to-point stock watering rights on the Sevier River

near its terminus, small stock-watering reservoirs that capture runoff that would otherwise flow to Sevier Lake, springs/seeps that issue from the Cricket Mountains immediately east of the Lake, and two deep wells that are located to the south and southwest of the Lake. Only one of these BLM water rights, Cricket Reservoir (Water Right No. 69-55), is within the proposed leasing area. It is a small stock watering impoundment which collects runoff. Cricket Reservoir #2 (Water Right No. 69-56) and Lakeview Well (Water Right No. 69-96) are immediately adjacent to the lease area boundary and the Black Hills Well (Water Right No. 69-21) is within one mile of the boundary. The BLM has other water rights that are located beyond those addressed here, but that are still relatively close to Sevier Lake -- notably Water Right No. 69-25 is for a well located approximately five miles away from the lake.

There are two other water rights in or near the proposed lease area (UDWRi 2010a). Water Right No. 69-40 is held by a private entity, and is for a single well used for stock watering and domestic purposes. The quantity is listed as 0.045 cfs year round. It is on the eastern side of the lakebed, within the area proposed for leasing. The other is Water Right No. 69-45, on file as being held by a private entity for stock watering use of 0.267 cfs obtained from a 218-foot deep well. The well is listed as located in the southwest end of Sevier Lake, which is within the proposed leasing area. These rights appear to be valid claims, with 1915 and 1935 priority dates, respectively, however it is not clear whether there is in fact a well at those locations or not, or whether these water rights are actively being used. The UDWRi (2010a) database does not include any information on them after about 1939; however, it does not indicate that either of these rights have officially lapsed. Additional water rights are likely located relatively close to the lake, but further away than the couple of miles that were researched for the purposes of this EA.

Also according to the UDWRi (2010a) database, two additional entities have filed applications for water rights within the lease area, but these have been protested and remain unapproved as of the date of this EA. Emerald Peak Minerals, LLC has applications under three water right numbers (69-103 (filed September 3, 2008), 69-104 (filed September 22, 2008), and 69-106 (filed March 3, 2009)) for a total of 421,000 acre-feet of surface water from Sevier Lake and numerous wells that would be drilled either within or close to the proposed lease area. Melville Irrigation Company filed an application in 2006 to drill five wells with a combined flow volume of 123,000 acre-feet, three of which are on or close to the proposed lease area. The application was filed December 28, 2006 and given water right number 69-102.

The Drinking Water Source Protection Zones (DWSPZ) are public water sources protected by the Utah State Division of Drinking Water. There are no DWSPZs near Sevier Lake. The Meadow Town Water System is located approximately 35 miles to the east from the east edge of the lake boundary. The Shilo Wells Water Company is located approximately 39 miles west of the western boundary of the Sevier Lake. This information was obtained from Arc GIS data at the BLM Utah State Office.

Water Right Name	Water Right Number	Location	Annual Flow Acre Feet	Miles away	Type
BLM Cricket Reservoir	69-55	N 2250 ft W 1615 ft from SE cor, Sec 30, T 23S, R 11W, SLBM	4.0	0	Surface
BLM Cricket Reservoir #2	69-56	S 976 ft E 1300 ft from NW cor, Sec 07, T 23S, R 11W, SLBM	7.0	0	Surface
BLM Lake View Well	69-96	S 300 ft E 1392 ft from NW cor, Sec 22, T 24S, R 12W, SLBM	10.9	0	Underground
BLM Black Hills Well	69-21	N 561 ft E 450 ft from SW cor, Sec 06, T 23S, R 12W, SLBM	36.2	0	Underground
BLM Well 5 miles away	69-25	N 1233 ft E 185 ft from SW cor, Sec 34, T 24S, R 13W, SLBM	33.6	5	Underground
Private Stock and domestic	69-40	N 290 ft W 840 ft from SE cor, Sec 01, T 23S, R 12W, SLBM	32.6	1	Underground
Private Stock	69-45	S 140 ft E 190 ft from NW cor, Sec 08, T 24S, R 12W, SLBM	19.3	7	Underground
*Emerald Peak Minerals	69-103	N 0 ft E 0 ft from SW cor, Sec 02, T 20S, R 11W, SLBM	400,000.0	0	Surface
*Emerald Peak Minerals	69-104	N 0 ft E 0 ft from SW cor, Sec 02, T 20S, R 11W, SLBM	20,000.0	0	Surface
*Emerald Peak Minerals	69-106	N 0 ft E 0 ft from SW cor, Sec 29, T 20S, R 11W, SLBM	1,000.0	0	Underground
*Melville Irrigation Company	68-3119	N 0 ft E 0 ft from NE cor, Sec 01, T 12S, R 5W, SLBM (2) N 0 ft E 0 ft from NE cor, Sec 01, T 16S, R 12W, SLBM (3) N 0 ft E 0 ft from NE cor, Sec 01, T 17S, R 13W, SLBM (4) N 0 ft E 0 ft from NE cor, Sec 01, T 18S, R 7W, SLBM	123,000.0		Underground

*Applications Filed

3.3.8 Wetlands and Riparian Areas

Given the inherent potential for water on the Sevier Lake playa, the potassium leasing proposal must consider the potential presence of riparian vegetation and/or wetland characteristics. Water resources were discussed in more detail in **Section 3.3.7**, but a brief summary is given here to provide a context for riparian vegetation and wetlands discussions.

Sevier Lake is fed primarily from the north by the Sevier River. This river is one of the Nation's most highly utilized river systems (UDWR 1999) and much of its streamflow is diverted well before it reaches Sevier Lake. Consequently, the downstream reach of the Sevier River only flows intermittently and at a much reduced rate than it would otherwise. Further, in the current climate regime and with existing upstream water uses, the lakebed itself is only inundated during periods of high runoff and the majority of the time the lake does not contain much, if any, standing water. These hydrologic characteristics affect the potential for riparian vegetation to colonize either the stream banks or the lakebed/lakeshore or for wetlands to develop.

Riparian Vegetation

In spite of diminished streamflows in the lower Sevier River, there is a riparian corridor associated with some of its stream channel. Describing the river at a location about 10 miles upstream of the Sevier Lake, outside of the proposed leases, Milford Wind Corridor, LLC (2008) noted the presence of a "relict riparian fringe" along the main channel and along abandoned side channels and meanders. They further noted that tamarisk (*Tamarix spp.*) and salt grass (*Distichlis spicata*) were the dominant species in these riparian communities. Within the proposed lease area, there may be similar riparian conditions along the Sevier River in Tract No. 49, in Section 8 of T20S, R10W. However, according to the EA that was prepared for the Milford Wind Corridor project (BLM 2008), salt cedar leaf beetles (*Diorhabda elongata*) have been released along the lower Sevier River. The intent of the beetle release project was to eliminate or greatly reduce tamarisk, which could enhance recolonization of more desirable species "in areas where remnant native plants exist and soil salinity and water tables permit". Along the Sevier River within the proposed leases, the beetles have been effective at killing the tamarisk (see ID Team Checklist in **Appendix A**), though there is no sign yet that native vegetation has begun to recolonize this stream reach.

The WSRA RMP (BLM 1987) contains general goals to protect and enhance riparian communities on the lands under its management. Other BLM policies, such as the Utah Riparian Management Policy, also reflect the importance of riparian areas on BLM-administered lands. However, within the proposed lease Tract No. 49, poor water quality and lack of consistent streamflow would constrain the potential for any specific riparian improvement projects that may be proposed in the future.

Along the shores of Sevier Lake, riparian vegetation appears to be very sparse or nonexistent, with the exception of some dead tamarisk along the northern edge near the mouth of the Sevier River (see ID Team Checklist in **Appendix A**). An EA (BLM 1987a) prepared in 1987 for a brine mining operation on Sevier Lake noted that vegetation above the lake's "high water line" consisted of Indian Ricegrass (*Oryzopsis hymenoides*), fourwing saltbush (*Atriplex canescens*), and horsebrush (*Tetradymia spp.*), all of which are upland plants. The EA did not mention any vegetation present below that elevation, nor was there any mention of riparian or wetland conditions. The more recent Sevier Lake Project Plan of Operations (Salada Minerals, LLC 1998) stated that no plants of any sort were present on the barren playa surface. The RMP categorizes

riparian habitat over 92,000 acres of Sevier Lake from T20S, R11W to T24S, R12W as “poor” in aquatic condition and “fair” in regard to riparian condition; the Sevier River including the reach within the leasing area, described as T18S, R8W to T20S, R10W is categorized as having “poor” aquatic condition and “poor” riparian condition (BLM 1987). Although the RMP states that 92,000 acres of the Sevier Lake are in ‘fair’ riparian condition, current observations (see photo in **Section 3.2**) of the lakebed indicate that riparian vegetation is absent over much or all of the lakebed.

Last, it is possible that there are isolated riparian areas associated with stock ponds and springs that are outside of the lakebed and outside of the proposed lease areas, but nearby (see Section **3.3.7** of this EA).

Wetlands

There have been no specific surveys to identify any wetlands that might be associated with the Sevier River as it flows through the proposed leases. However, the above-noted poor condition of the riparian community and the fact that the plants comprising the dominant vegetation are not classed as obligate species suggests that wetland conditions are not likely to be present along the Sevier River in this area. This is supported by the previously noted report (Milford Wind Corridor, LLC 2008) that describes a similar riparian corridor 10 miles upstream of the Sevier River’s mouth; it also notes that no hydric soils or wetland hydrology were present at that location.

Similarly, there have been no specific surveys to identify any wetlands that may be associated with the Sevier Lakebed itself. However, according to one of the previous EAs (BLM 1987b) that was completed for a proposed brine mining operations on the lakebed, a USACE 404 Permit was obtained for disturbances in the lakebed due to non-wetland waters of the U.S. considerations. In contrast, for a similar project on Sevier Lake in 1998, the USACE made the determination that a 404 Permit was not needed (Salada 1998). The USACE has been contacted recently in regard to their potential interest in jurisdictional wetlands or waters of the U.S. issues associated with future actions on the area that would be leased, but no determination has yet been made.

What is known, however, is that despite the lack of consistent surface water in Sevier Lake, portions of the Sevier lakebed are often saturated at or very near the ground surface. This could mean that both the hydrologic and the soils criteria for wetland designation are present on the lakebed. The vegetation component appears to be lacking, however. Because all three of these environmental parameters (hydrology, soil, and vegetation) must support a wetland determination, it appears likely that defined wetlands are lacking in Sevier Lake.

There could, however, be small isolated wetlands associated with stock watering ponds or springs on lands adjacent or near to the proposed leases.

3.3.9 Wildlife

Pronghorn are the main large wildlife species known to occur in the Sevier Lake leasing area and on adjacent lands. The species is common in Utah, where it primarily occurs in desert, grassland, and sagebrush habitats. The visibility of pronghorn in open terrain, especially in the vicinity of roads and highways, makes them popular subjects for non-consumptive wildlife recreational interests in many areas of Utah (UDWR 2009). Pronghorn are often found in small groups and are usually most active during the day. Utah Division of Wildlife Resources designated pronghorn crucial, year-long habitat occurs on the north, east, and south sides of Sevier Lake (See habitat map in **Appendix D**). The RMP (BLM 1987) Map 2 delineates several critical antelope habitat areas in the Cricket Mountains and House Range.

Mule deer yearlong habitat is present in areas off-lease, in the Cricket Mountains and House Range. The Cricket Mountains and House Range also provide chuckar partridge range.

The 1997 Plan of Operations, Sevier Lake Project references the 1987 BLM assessment of Crystal Peak's project, which notes that wildlife near the lake consisted of antelope, rodents, and reptiles. Brine flies and brine shrimp were present in and about the flooded playa surface at the time of this study (Salada 1997).

There are several animals designated as BLM sensitive species in the FFO area. Most of these are raptors discussed above in **Section 3.3.4**. Additionally the kit fox is designated as a BLM sensitive species. The kit fox is highly adapted to arid and semi-arid areas. Habitats include desert, grassland/herbaceous, playa/salt flat, savanna, shrubland; primarily in open desert, shrubby, or shrub-grass habitat. In the Great Basin, the kit fox is found in shadscale, greasewood, and sagebrush. According to the UNHP database, kit fox were observed in the Long Ridge SW Quad area in 1988, and in the Headlight Mtn. Quad area in 1995 (See map, **Appendix D**).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

As noted in **Section 1.7**, the Proposed Action appeared to have at least the potential to impact numerous resources, based upon a very preliminary analysis that took place during scoping. Air quality, cultural resources, floodplains, livestock grazing, migratory birds, wildlife other than special status species, socio-economics, water resources, and wetland/riparian zones were all identified as potentially impacted (See **Appendix A**, ID Team Checklist), thus they are the focus of this EA. The existing environmental conditions for each of these resources were described in Chapter 3 to provide the basis for the impact analysis in the following subsections.

The impact analysis assumes that the leasing action is tied to a reasonably foreseeable development scenario. With this in mind, direct effects are those occurring in the same place and time as the leasing and development action. Since there are no direct natural resource impacts from leasing itself, the potential direct impacts are described per the development scenario presented. Indirect impacts are those that could result from the presumed development scenarios, but are later in time or further removed in distance. Although the leasing development scenarios are conceptual, they are analyzed to meet the CEQ requirement to analyze and disclose reasonably foreseeable impacts from reasonable foreseeable actions when there is incomplete or unavailable information (40 CFR 1502.22). Where reasonable to do so, assumptions have been made for specific resources, and these are provided in the relevant subsection.

All mitigating measures have been included in the Description of Alternatives and list of stipulations (**Section 2.2.2**), and these have been taken into account in the impact analysis. No additional mitigation measures are described.

4.2 Direct and Indirect Impacts

4.2.1 Direct and Indirect Impacts of the Proposed Action: Sevier Lake Alternative A Lease Tracts (125,762 acres)

4.2.1.1 Air Quality

Issue: *The act of leasing would not authorize any actions other than conveying the rights and therefore would not have any direct impacts. However, under the RFD ground disturbing activities on and off lease have the potential to create fugitive dust. Any approved actions would require a dust control plan. Sevier Dry Lake constitutes a large source of dust during high wind events. Flooding of the lake surface would reduce the amount of dust that the area witnesses during these wind events. However, if farmland was to be taken out of production due to diversion of irrigation water, there could be increased dust from these areas.*

Millard County is currently an attainment area for NAAQS. The Intermountain Power Project (IPP) is the predominant point source for non-particulate criteria pollutants. Criteria pollutants emitted by development activities would negligibly add to those emitted by IPP, and it's unlikely the operation would require a PSD permit. Nor are there any Class I areas likely to be affected by the proposal.

The leasing and development of the Sevier Lake potash leasing area would have initial temporary minor direct impacts on air quality, and long term positive impacts to air quality.

Initially, the construction of 250 miles of berms and 300 miles of ditch may impact air quality in the Sevier Lake area, especially on windy days that kick up dust clouds over the lake under natural conditions. However, the majority of ditch and dike construction would occur in damp to saturated soils, therefore fugitive dust releases would be minimal. Dust control practices would reduce the construction-related dust on the plant site. The brine pond surface construction disturbance would eventually be covered up by the ponds. Once constructed and operational, brine ponds would inundate approximately 47,000 acres of Sevier Lake. This would eliminate most wind erosion from this 47,000-acre area and could result in moderate beneficial effects to air quality, because of the substantial reduction in exposed erodible lakebed soils. Flooding of the lake surface would reduce the amount of dust that the area witnesses during high wind events.

Regular inspection and maintenance of vehicles, facilities, and engines, as would be directed under an Approval Order from the DAQ, would minimize impacts to air quality due to emissions from mobile and stationary sources. Direct impacts to air quality from emissions sources would be localized at the processing plant, minor, negative, and long term. The NAAQS would be met for processing and operations. Based upon the development being subject to an Approval Order from the DAQ, and the distance of Sevier Lake from PSD Class I areas (at least 100 miles), there would be no anticipated impacts to PSD Class I areas.

Salada's 1997 proposed mining and processing operations at Sevier Lake were preliminarily determined by UDAQ to not be a major source, and therefore not require PSD permitting. Based upon this, it is not expected that the Sevier Lake potassium leasing and development proposal would require PSD permitting.

The indirect impacts to air quality would result from related mineral development activities off-lease for ROW and road development. ROW approvals would include use of dust control measures such as water sprays or dust suppressant to reduce dust. Implementation of other environmental protection measures, such as posting and enforcing speed limits, would minimize impacts to air quality due to fugitive dust. Stipulation 15 requires that the mineral development company address these protection measures as well as on-lease measures prior to conducting surface disturbing activities.

4.2.1.2 Cultural Resources

Issue: *There may be NRHP-eligible cultural resources within the lease boundaries that could be impacted by future development. Results from the Class I file search indicate there have been 17 previous cultural resource inventories within a one-mile perimeter of the proposed potash leasing area. Twenty-five previously recorded archaeological sites are present in the study area (within one-mile of the proposed potash leasing area). All of these sites are located along the northeastern margins of Sevier Lake near the mouth of the Sevier River; 15 of these sites are located within the boundary of the Sevier Lake potash leasing area, 10 are located on lands outside the leasing area. A total of nine sites are unevaluated for the NRHP, four are NRHP-eligible, and two of these sites have been recommended ineligible for the NRHP.*

The leasing and development of 125,762 acres of Sevier Lake potassium lease tracts could impact cultural resources. Under Alternative A, 15 known cultural resource sites are located within the proposed leasing parcels (**Table 3-4**). These sites include 14 prehistoric lithic scatters and 1 prehistoric artifact/feature scatter with burial. A total of nine sites are unevaluated for the NRHP, four are NRHP-eligible, and two of these sites have been recommended ineligible for the NRHP.

Development of potash leases on 125,762 acres would not result in surface disturbance to that entire area. In the manner that potash is mined, there is the ability to avoid cultural resources. Additional cultural resource inventories would be required by Stipulation 10, for any areas of proposed disturbance within the lease parcels.

With lease stipulations in place, and the potential to avoid sites through design, it is expected that resultant impacts to cultural resources would be minor. With the potential to adjust any off-lease ROWs to avoid cultural sites, indirect impacts to cultural resources are expected to be minor.

4.2.1.3 Livestock Grazing

Issue: *Cattle and sheep grazing occur on lands surrounding Sevier Lake; the lakebed itself is not managed for grazing due to lack of forage. The Sevier Lake potash leasing areas include about 8,000 acres in the corners of eight allotments. These areas support very sparse vegetation with poor forage value, due to the low elevation, aridity and proximity to the salty Sevier Lake playa. No measureable direct effects to the forage resource would occur on lease. There could be indirect effects to livestock use due to ROW development. There could be safety issues for livestock due to increased road traffic under the RFD.*

The direct impacts to livestock grazing due to Sevier Lake potassium lease development would involve the approximately 8,000 acres of lower forage value lands adjacent to Sevier Lake on portions of eight allotments.

Because the proportion of allotment lands potentially affected by mineral development would be small (1.3 percent) and much of these lands have low forage value, impacts would be negligible to minor, adverse, and would likely be long-term. However,

reclamation would eventually occur and the revegetation stipulations described in Chapter 2 would require a return to near-previous vegetation cover.

If work related to construction and/or operation occurred between late fall and early spring when cattle or sheep were using the allotments that abut the lake, livestock could be affected. Construction equipment and personnel accessing the site in trucks would create fugitive dust and locally reduced visibility. It is possible that livestock in open range on access roads could be struck or killed by a vehicle. However, stocking rates on these lands are low and there is adequate range area for sheep or cattle to move away from mineral development activity, which reduces the likelihood of vehicle collisions with livestock. Indirect impacts to livestock managers could be the benefit from newly constructed or improved access roads. Such impacts would be minor but beneficial over the short and long term. Minor, adverse short term (during construction) indirect impacts to livestock grazing activity could occur with off-lease development of pipelines and other rights of way.

Since the water source(s) developed for processing the brines (groundwater potentially pumped from various locations) would be based upon a comprehensive groundwater study, the effects would be more fully evaluated once these locations are known. Livestock watering sources may be impacted, however these impacts would be short term, as the required water monitoring (Stipulation 13) and water replacement (Stipulation 8) efforts would reduce or negate this potential negative impact. Impacts to water resources are addressed more fully in **Section 4.2.1.7 Water Resources**.

4.2.1.4 Migratory Birds

***Issue:** Migratory birds, primarily shorebirds and waterfowl, seasonally may be attracted to open water habitat created by evaporation pond operations. Birds landing on these ponds can become encrusted with salt and may drown. Birds that preen their feathers can become sick or die from ingesting too much salt. Birds may also suffer from cold stress as the salt crystals reduce the insulating ability of the feathers (www.fws.gov/mountain-prairie/contaminants/contaminants3.html).*

With the award of potash leases under the Proposed Action, direct impacts to neo-tropical migratory birds could result from development activities that disturb the land surface in any upland areas that provide nesting and foraging habitats. Potential impacts to migratory birds and their habitat would need to be reviewed under a detailed plan for development. Migratory bird surveys in appropriate habitats, avoidance of potential nesting areas by design, and construction outside of nesting season are ways in which the likelihood of impacts to migratory birds would be minimized.

Raptors including bald eagles, which are known to use the general Sevier Lake area for wintering, and golden eagles which may use the general area yearlong, are not likely to be affected by leasing and mineral extraction activity on Sevier Lake for the following reasons: the leasing area includes a vast dry lakebed across which any sounds from project development activity would be dispersed; the lack of prey base on the Sevier Lake

leasing area; and the distance from the lake to the closest mountains (at least 4 miles from either lake edge) that may provide habitat. As with other raptors and migratory birds that may occur in the area, potential effects to ferruginous hawks, northern harriers, and burrowing owls, if present, would be reviewed according to Stipulation 9, in conjunction with a proposed plan for development.

The development of ponds is expected to attract shorebirds and waterfowl to the area. Ponds containing water that is low in dissolved salts may provide limited beneficial habitat for such birds. Open water habitat may provide a resting and foraging habitat for migrating birds. Ponds of low salinity may provide acceptable habitat conditions favorable to the growth of brine shrimp which in turn may provide a forage source. However as the evaporation process proceeds and the water in subsequent ponds becomes more saline this benefit is eliminated. The ponds that contain poor quality water that is high in dissolved salts, including trace metals due to brine concentration, may cause bird health issues or potential bird mortality. Stipulation 9 requires a wildlife inventory and mitigation plan that would reduce this impact.

Indirect impacts to migratory birds with developments off-lease would mainly be associated with construction activity, and loss of foraging habitat. Based upon the inventory and mitigation required under Stipulation 9 for the associated lease areas, the requirements to comply with raptor protection measures, and reclamation requirements for ROWs, the indirect impacts to migratory birds would be minor, adverse, and short term.

4.2.1.5 Socio-Economics

Issue: *Actions under the RFD would bring jobs and money to the local area. Transfer of water rights from agricultural to mineral extraction use could decrease the area of irrigated fields which would have impacts on the local economy.*

For the purpose of analyzing potential impacts from development of the proposed leases a reasonable construction and operations scenario was based on the June 1997 “Plan of Operations, Sevier Lake Project,” submitted by Salada Minerals LLC to the BLM and other agencies. Salada’s primary product would have been halite (sodium chloride) from less than half of the acreage proposed for leasing. While it is a reasonable scenario for analytical purposes, the lessees of the proposed leases would likely have a plan of development which would be somewhat, or substantially, different than that used by Salada.

For a single operation leasing 125,762 acres of Sevier Lake for a potash mine and processing plant, the socioeconomic analysis is based on the following assumptions:

- Construction (pre-production) would take approximately four years and be phased over that period with a lag time between initial construction of solar ponds and canals, and later construction of production facilities

- Average direct employment during construction would be approximately 100 with about 50 coming from outside the local area and using temporary housing
- During operations/production, the facility would have a full-time, long-term work force of 100 and an annual payroll of \$4,500,000
- Approximately 50 of the full-time operations workforce would be local hires
- Indirect and induced employment (to expand local businesses to meet the need of the larger population) would be approximately the same as the workforce (approximately 100 people) during construction and approximately half of that during operations.

These assumptions would need to be refined once a plan of development was established, and an economic input-output model could then provide a more accurate estimate of income, secondary employment and other benchmarks that would enable a more meaningful potential impact assessment.

Potential impacts from the project fall into several general categories, those being population, community services (such as schools and law enforcement), housing, employment and income, and tax receipts. Considering the variability and uncertainty with the scenario being analyzed, the analysis has been kept general and largely qualitative.

It is assumed that construction of various facilities would be sequenced, starting with the solar ponds and canals, and later with infrastructure for production facilities, the production facilities themselves, and shipping facilities. These phases may require different construction skill sets and equipment, suggesting that specific contractors and crews would each be on the site for a more limited time period.

Using the OPB population estimates for 2009 (**Table 3-6**), the combined populations of Millard and Beaver counties is 20,278. Using the conservative assumption that all 100 workers from the construction work force would come from outside the local area, the impact would be an additional 0.5 percent to the population. Limiting the impacted area to the cities and towns within the impact area described in **Section 3.3.5** decreases the impacted population to 11,908 (U.S. Census Bureau estimate for 2008, Table 1), which would increase the impact to 0.8 percent of the population. Doubling the impact to account for secondary employment would further increase the impact to approximately 1.6 percent of the current population.

In practice, given the current high unemployment rate, it is likely that a higher percentage of hires, particularly for secondary employment, would be from the local area, since they are typically jobs in the retail, food service, and lodging sectors. Construction workers who move temporarily to job sites usually do not bring family members and stay in transient lodging (i.e., motels, hotels, RV parks). Consequently, it seems unlikely that the construction phase of development of the proposed leases would have a significant adverse effect on housing, employment, community services or income; in fact, the impacts to employment and income would likely be beneficial.

In the area of taxes, development of the leases would benefit local and state government by increasing tax collections from sales and use tax (both company and employees' purchases), property taxes on increased valuation of the leased property, income tax collections, and essentially on all taxes across the board.

The operation of a potash facility on Sevier Lake would differ from the impacts of construction in several regards. The operation of a production facility would be constant and sustained over a longer period. Second, the workers are likely to live in permanent housing and, on average, have households with approximately 3.15 members each, which is the statewide average (OPB 2010). In addition, permanent residents tend to generate fewer indirect and induced jobs because, for example, they eat at restaurants less frequently and generally require fewer services. These differences translate into greater potential impacts per employee on housing, schools, and community services.

Given the current high unemployment rate, it is likely that a majority of the 100 new permanent full-time positions that would be generated by the operation of a potash mining and processing facility would be local hires. The average civilian labor force for Millard and Beaver counties combined was 9,234 in 2008 (**Table 3-8**). Even at the 2008 average unemployment rate statewide of 3.4 percent, 300 workers would be available. At the 2009 statewide unemployment rate of 6.6 percent, over 600 workers would be available for 100 positions. Assuming conservatively that the facility would hire half (50) of the new positions locally and half would come from outside the area, that would represent a population increase of approximately 50 workers times the average household size of 3.15 people or a total of 158 new residents. Add to that 50 new secondary jobs (indirect and induced combined), of which, conservatively, half would be from outside the area, and an additional impact of 79 new residents (25 times 3.15) might be added to the local population. Combining the direct and secondary new residents would add a total of 237 people to the local population. Here again, if we limit the impacted area to the cities and towns within the area described in **Section 3.3.5**, the impacted population would be 11,908 and the potential impact of 237 new residents would be an increase of 2.0 percent, which should be within the range that local schools, housing and community services can accommodate, particularly in light of steady to declining school enrollment (see **Section 3.3.5**) and some indicators of declining population in Millard County (**Table 3-6**). These conditions suggest the infrastructure and capacity to provide services to a larger population are already in place.

Development of the proposed leases would provide a substantial boost to the property tax base, which would benefit Millard County, and the general expansion of the economy would improve potential tax receipts from residential property taxes, sales and use taxes, and income taxes in both counties.

One potential adverse economic impact would be to agricultural production if water rights were to be purchased from agricultural interests for development of the leases. There could be a reduction in agricultural production or reduction in irrigated farmland (and associated reduction in acres of soils that are prime when irrigated). Under

Stipulation 13, the study of hydrologic interactions, the possible extent of this effect can be anticipated. The overall, socioeconomic impact to Millard and Beaver counties with employment and operation under the RFD is expected to be beneficial, improving both the economy and the tax base.

4.2.1.6 Visual Resources

Issue: *Bureau Manual -8400 provides the authority for development and implementation of Visual Resource Management of public lands. The Warm Springs Resource Management Plan, April 1987, defines the VRM management classes for this plan. The project area is within a VRM Management Class IV and meets the requirements of the Land Use Plan.*

The project area is bounded on the north end of the lakebed by US Highway 6-50. The project area on the south end of the lakebed is bounded by Blackrock Road. Traffic on the north end would be unlikely to see a large portion of the project area. The project would probably be more visible by traffic on the south end, however traffic in this area is sparse and limited to a few local residents and casual travelers in the area.

Visual resources are evaluated as part of activity and project planning and consider the visual sensitivity of the affected area. Recent visual resource inventories have indicated that the project area would rate as VRM Inventory Class III. Development of the lakebed could result in an increase of a future VRM Inventory rating as Class IV (see page 6 of BLM Manual Handbook 8410-1 for an explanation of assignment of inventory classes).

The direct visual effects of leasing and development under the RFD would initially include increased activity and vehicular traffic in a remote, inactive setting. With construction of facilities, the effect would include introduced linear features and man-made structures and textures in a fairly undeveloped landscape dominated by the flat expanse of dry lakebed, with a backdrop of hills and mountains on the east and west sides. Based on the lack of development surrounding the lakebed and the limited traffic on US Highway 6-50, visual impacts from development of facilities on lease would be minor to moderate, and long term. Traffic on the north end of the lake would be unlikely to see a large portion of the project area. Whether the impacts are negative, positive or neutral is the perception of the viewer. The lakebed is widely expansive, such that views from mountain ranges 6 or more miles to the east or west would likely show mainly as patterns on a typically uninterrupted surface. From that distance, vehicles working in the area may be only barely visible or not visible at all. Those viewing the facilities at close range would likely either be working at them, or passing through the area, and therefore impacted minimally by the development. The impacts of development would be allowable in a VRM Class IV area, but may require further stipulations if considered a VRM Class III area.

The indirect effects of added ROW development would likely include linear features through the landscape where none currently exist. In the case of linear pipeline disturbance, the surface effects would be minimal when reclaimed over the long term. Above-ground linear features such as power poles and power lines would be permanent

additions to the landscape between the facility and a connection to other, existing power lines or facilities.

4.2.1.7 Water Resources including Floodplains

Issue: *Several new wells have been identified as being necessary for mineral extraction. Because of the large amount of water that will be required, there is a potential for harm to existing BLM water rights in the project area. The lease stipulations call for analysis of water resources and monitoring for effects to water right holders. Stipulations also call for replacement of water resources to maintain existing uses such as livestock, agricultural, and wildlife. All of Sevier Lake up to the 100-year flood mark can be classified as floodplain as defined in Executive Order 11988 on Floodplains. For details, see the Technical Report, Floodplains and Hydrology, Appendix B.*

Issuing the proposed leases would have no direct effects on water resources, including floodplains, because no on-the-ground activities would take place. There would be no alteration of the hydrologic regime, stream flows, groundwater depths, aquifer recharge/discharge, or water quality because, again, no physical occupancy of the land would occur. Further, leasing would have no direct effect on the BLM's water rights (either on- or off-lease), or on the two private entity rights that may be inactive. A decision to lease approximately 125,762 acres of land within a defined floodplain would presumably meet the avoidance/alternatives tests due to the inherent nature of the resource at interest (potassium salts found in terminal lake brines). As indicated in Executive Order 11988, before the BLM can allow an action to take place in a floodplain, it must consider whether the action can occur elsewhere outside of the floodplain, thus avoiding the potential to impact resources and functions associated with the floodplain. This consideration involves an assessment of alternatives. If the only practical alternative requires siting in a floodplain, BLM can allow the action, but it must (1) ensure that potential harm would be minimized; (2) issue a notice containing an explanation of why the action is proposed to be located in the floodplain as well as covering other requirements; and (3) comply with other provisions of the Order. For the action under consideration here, eventual use of the floodplain associated with Sevier Lake is inherent if the leases were granted, thus all action alternatives would occur within it and avoidance would not be possible under this or any other action alternative.

As a result of these lands being made available for lease, it is likely that development of the potash resource would follow (after additional application, environmental analysis, and approval processes for a specific development plan). Impacts that could potentially occur to the surface water and groundwater within and near Sevier Lake are described below.

First, since 113,334 acres of the leases would be within the 122,315-acre area that is being defined as floodplain, up to 93 percent of the Sevier Lake floodplain could be impacted via inundation.

Next, an evaporative process is by nature a consumptive use of water. Water rights would have to be obtained prior to any development - or use - of water associated with a

mining plan. For an evaporative process such as would be likely under Alternative A, two different types of water would be needed. These are discussed separately below.

First, the Proposed Action assumes a need for seven wells that could provide a combined volume of 900 acre-feet per year of fresh water. Given constraints on new appropriations in this area (UDWRi 2010) and what may be limited opportunities to purchase an existing water right in close enough proximity to pursue a reasonable change in place-of-use approval, it is not known where sufficient supplies will come from and ultimately this quantity of water may not be available. However, if the water can be obtained, the process would result in a loss of that quantity of fresh water from the current water balance in the area.

Second, the Proposed Action assumes an additional need for deep brine wells and shallow intercepting ditches, which would result in consumption through evaporation of approximately 120,000 acre-feet per year of very saline water (brine). These wells and ditches would need to be placed either within or in very close proximity to the lake bed. The brine consumed would also result in a loss from the current water balance, though in part would simply accelerate an already high evaporative loss from this area of natural groundwater discharge.

While the combined quantities of fresh and briny waters that would be needed under the Proposed Action are less than the amounts applied for by the two entities whose water right applications are currently under protest (discussed above in **Section 3.3.7**), it is likely that any new water rights or changes to existing water rights would similarly be closely scrutinized. In part, it would be the responsibility of the State Engineer to ensure that other existing water rights would not be harmed by granting any related water rights approvals. In addition, environmental analysis would have to assess the effects not only on other water rights, but on the water resources themselves (springs, groundwater movement, recharge to nearby wells, surface/groundwater interactions, etc.) and any biological resources that are dependent upon those water resources (riparian vegetation, aquatic life, etc.). This would require an extensive investigation, and perhaps modeling, of both the basin-fill and carbonates aquifers. Such an investigation is beyond the scope of this leasing EA, but one would be required of any lessee as described in Stipulation 13, above. Further, Stipulation 8 requires water replacement should data indicate that quantity or quality impacts occur.

Next, by its very nature, the Proposed Action development scenario would result in physical alterations of the lakebed within the floodplain. Up to 300 miles of ditches, 250 miles of berms, and 47,000 acres of ponds could be constructed within the floodplain. However, the floodplain associated with a terminal lake does not provide the same ecological or socioeconomic benefits as does a floodplain associated with a river or stream. In this case, the construction of these types of features within the floodplain and the inundation of much of it would not be expected to cause harm to structures currently outside the floodplain, and the structures themselves would be designed for conveying or holding water during normal operations and normal conditions. Should the weather

patterns of 1983-1984 repeat themselves, and result in a large influx of water to Sevier Lake, there could be an increase in inundation area and lake elevation, which could cause temporary effects to both the lake edge, nearby roads, and an operator's lakebed infrastructure. Depending upon the specific operations and the specific timing of any runoff event, there may be ample time to prepare by ceasing pumping activities, etc. in order to minimize impacts. Because the Sevier River is located at the northern end of the lake and is by far the largest source of flood flows, impacts from flooding would tend to be greater in the northern half of the lake, with effects somewhat damped at the southern end.

During more normal weather patterns, however, it is likely that surface water levels at Sevier Lake would generally increase through most of an annual water cycle as groundwater is pumped from below Sevier Lake and surrounding acreage. Floodplain levels would be very dependent on how other surface waters at Sevier Lake are regulated. The best estimate on floodplain levels are that they would likely remain at about historic levels. Potential effects to surface water quality would likely be confined to what could occur as a result of transportation-related activities. For example, hauling fuel to, or product from, the processing plant could result in contamination of a surface water resource in the event of an accidental or spill. There would also be the potential for increase erosion and/or storm water runoff from disturbed areas associated with the plant site, powerlines, gas lines, etc. However, given the position at the downstream end of a terminal basin, and the fact that best management practices would be implemented, this would not be likely to affect surface water quality to any measurable degree. Most of these would occur off of the lease areas, presumably, but would be related to the actions taking place as a result of, and on, the leases.

Potential effects to groundwater quality could result from the selective harvest and removal of certain salts, while others are left in place. This could cause a localized change in the ionic composition of the groundwater as water levels recover after mining is complete and the remaining evaporates are subject to dissolution. Whether this would occur and to what extent cannot be assessed at this time. But, given the location at the terminal end of a closed basin, such changes would not likely be of consequence to either other waters elsewhere or other ecological resources. Again, as noted, Stipulation 8 requires water replacement should data indicate that water quality is impacted.

4.2.1.8 Wetlands and Riparian Areas

Issue: *Although portions of the Sevier lakebed are often saturated at or very near the ground surface such that the hydrologic and the soils criteria for wetland designation may be present on the lakebed, the vegetation component is lacking. Because all three of these environmental parameters (hydrology, soil, and vegetation) must support a wetland determination, there are no defined wetlands associated with the lakebed, and no defined wetlands known within the lease area.*

There is no riparian vegetation on the Sevier lakebed. There is an area of low value riparian habitat near the Sevier River inlet; this habitat has undergone beetle treatment to kill the tamarisk. The few identified riparian areas (RMP Map 3) on lands near Sevier

Lake include one site on the northern end of Sevier Lake and additional sites to the northeast of the project area, one site in the Cricket Mountains and one site in the San Francisco Mountains. It is possible that there are isolated riparian areas associated with stockponds and springs that are outside of the lakebed and outside of the proposed lease areas, but nearby. However, the potential for indirect effects to off-lease wetlands or riparian areas is small since activities that are proposed under the RFD could likely be designed to avoid any wetlands or riparian areas.

Leasing and development of the Sevier Lake parcels would not likely have a direct effect on streamflows in the lower Sevier River and thus would not likely directly affect riparian vegetation along its banks by reducing streamflow. However, there could be an indirect impact to riparian vegetation if pumping lowers the water table along this reach, to a degree that riparian vegetation cannot be supported. There could also be a direct impact to the riparian corridor if a lessee were to include the lower Sevier River within their inundation area. As noted in **Section 3.3.8**, the existing riparian vegetation consists of dead or dying tamarisk and salt grass, so the potential loss of this riparian community would be inconsequential. Further, given the likely low potential to improve riparian conditions along the lower Sevier River, due to already existing conditions, this loss would also be inconsequential.

There are no wetlands with vegetation in the lease area and there are no riparian areas within the lease area outside of those in proposed lease Tract No. 49. Therefore, there would be no potential to impact riparian areas or wetlands with vegetation within the lease area outside of Tract No. 49. As stated above, impacts to riparian vegetation in this area would be inconsequential since it consists mostly of dead or dying tamarisk and some salt grass. Beetles have been released to kill the tamarisk and water in the river is diverted upstream. However, both riparian areas and wetlands could be present outside the lease area, in localized areas associated with stock ponds or springs. The potential to impact those as a result of the development scenarios would be an indirect one, due to pumping/consuming water to a degree that affects the water source for these isolated areas. This potential impact would be addressed and mitigated under Stipulation 13.

4.2.1.9 Wildlife

Issue: *Raptors, antelope, and other wildlife could be affected by development activities under proposed leases. Negligible habitat value exists on the Sevier Lake hardpan specifically. Review of Utah Division of Wildlife Resources heritage data base identifies substantial to critical habitat value for pronghorn and mule deer around the perimeter of the lake and the surrounding area. Indirect impacts associated with construction and operations (ex. increased noise, traffic, humans) may impact movement patterns, foraging, and breeding behaviors.*

Direct impacts to wildlife could occur with lease development, depending upon the proposed plan for development. Although not always subject to activity-related avoidance behaviors, pronghorn could be impacted by increased travel on access roads or construction activity. It is expected that documentation of wildlife present on lease and

mitigation under Stipulation 10 would reduce this potential impact to minor, adverse, and long term.

4.2.1.10 Residual Impacts under the Proposed Action

Increased access to one or more allotments due to the development of improved access roads for mineral development may be a beneficial residual impact to livestock managers.

Additional residual impacts may be identified under a specific development plan, however adaptive management strategies, based upon the results of data gathering efforts under the Chapter 2 lease stipulations, would be utilized to minimize residual resource impacts.

4.2.1.11 Monitoring and/or Compliance

Monitoring and compliance stipulations that would be attached to the leases as part of Alternatives A and C (part of the Proposed Actions under the Action Alternatives) are presented in **Section 2.2.2**.

4.2.2 No Action

Under this Alternative, the parcels would not be offered for competitive leasing at this time. The purpose and need for the Proposed Action would not be met. A large source of fertilizer for use in the United States would not be available. Potential beneficial economic impacts associated with the Proposed Action would not be realized. Under the No Action Alternative, the Sevier Lake competitive potash leasing proposal would not contribute to local, regional, and state economies, or supplement the global supply of potash.

Under No Action, all resources except for Air Quality would be unaffected by the lack of development of the Sevier Lake leasing area; current trends in resource use and management would continue. Air Quality has the potential to be improved by the implementation of leasing and development, once the ponds are in place to limit available wind-borne dust. Therefore, No Action would not provide this benefit.

4.2.3 Direct and Indirect Impacts of Alternative C: Sevier Lake Alternative C Lease Tracts (96,000 acres)

4.2.3.1 Air Quality

The impacts to air quality under Alternative C would be similar to those described under the Proposed Action, however, the initial construction would involve less disturbance – 100 miles of ditch and 60 miles of berms, and therefore the initial temporary dust impacts would be less. As with the Proposed Action, flooding of the lake surface would reduce the amount of dust that the area witnesses during high wind events. The beneficial effects of inundation would be less in area (10,000 acres as opposed to 47,000 acres), but longer in duration (about four times longer project life). Less acreage would be devoted to ponds, and more of the dry lake surface would be exposed to wind erosion, resulting in

greater dust concentrations in the air than under the Proposed Action. As described for the Proposed Action, there would be no impacts to PSD Class I areas.

4.2.3.2 Cultural Resources

The development of the leased lands could directly impact cultural resources. Under Alternative C, seven cultural resource sites are located within the proposed leasing parcels (**Table 3-4**). The sites are all prehistoric lithic scatters of which all are unevaluated for listing on the NRHP.

Development of potash leases on 96,000 acres would not result in surface disturbance to that entire area. In the manner that potash is mined, there is the ability to avoid cultural resources. Additional cultural resource inventories would be required by Stipulation 10, for any areas of proposed disturbance within the lease parcels.

With lease stipulations in place, and the potential to avoid sites through design, it is expected that resultant impacts to cultural resources would be minor. With the potential to adjust any off-lease ROWs to avoid cultural sites, indirect impacts to cultural resources are expected to be minor.

4.2.3.3 Livestock Grazing

Effects of leasing 96,000 acres would be the same as described under Alternative A except that the Seely allotment would not fall within the lease area, and acreage affected in remaining allotments would be less than described in the Proposed Action, but the effects would occur over a longer period – 24 years as opposed to 6.5 years under the Proposed Action. Impacts would be negligible to minor, adverse, and would likely be long-term. As with Alternative A, revegetation would eventually return these areas to suitable forage.

Because livestock seldom graze the acreage located within the Proposed Action or Alternative C lease areas, there would be no measurable difference in forage availability between the alternatives.

Less area would be developed under Alternative C, but the project duration would be four times longer, with a lower production rate. It is possible that less groundwater would be used for processing. Under Stipulation 8 requiring water replacement, this effect would be minimized for both Alternatives A and C.

Indirect effects to livestock grazing under ROW development would be less than under Alternative A since less area would be affected by ROW development.

4.2.3.4 Migratory Birds

Direct impacts to migratory birds would be similar to those anticipated under Alternative A, however there would be less area devoted to ponds (10,000 acres as opposed to 47,000 acres) and project duration would be four times longer.

Indirect impacts to migratory birds with developments off-lease would be less than under the Proposed Action, because ROW disturbance would be less. Based upon the inventory and mitigation required under Stipulation 9 for the associated lease areas, the requirements to comply with raptor protection measures, and reclamation requirements for ROWs, the indirect impacts to migratory birds would be minor, adverse, and short term.

4.2.3.5 Socio-Economics

Under Alternative C, the types of socio-economic impacts would be similar to those described for Alternative A. It is likely that the level of impacts would be smaller, but would carry over the longer time frame for Alternative C (25 years as opposed to 6.5 years for the Proposed Action). Since impacts to the economy and other socioeconomic resources would be considered beneficial overall under the Proposed Action, the same would be expected under Alternative C.

4.2.3.6 Visual Resources

Impacts to visual resources would be similar to those described under Alternative A, but less of the lakebed surface would be developed with less surface ‘patterning’ due to less miles of ditches proposed (100 miles as opposed to 300 miles under Alternative A) and less pond berms (60 miles as opposed to 250 miles under Alternative A). The duration of effects would be longer term (24 years as opposed to 6.5 years under the Proposed Action). The impacts would be less visible from Highway 6-50 because the offered lease parcels begin nearly two miles further from the highway than under Alternative A.

4.2.3.7 Water Resources including Floodplains

As with Alternative A, the Alternative C leasing scenario would not directly impact water resources, including floodplains, because no on-the-ground activities would take place. However, like Alternative A, this alternative includes a development scenario that would follow (after additional application, environmental analysis, and approval processes for a specific development plan) leasing. The Alternative C scenario is similar to the Alternative A scenario, except that it involves a reduction in area and a reduction in water usage. Impacts that could potentially occur to the surface water and groundwater within and near Sevier Lake under Alternative C are described below.

Since 88,075 acres of the leases would be within the 122,315-acre area that is being defined as floodplain, up to 72 percent of the Sevier Lake floodplain could be directly impacted via inundation.

Further, although less water is predicted for use in this Alternative as compared with Alternative A, water rights would still have to be obtained. This alternative assumes a need for fresh water from wells that could provide 600 acre-feet per year of fresh water. As with Alternative A, it is not known where sufficient supplies would come from and ultimately this quantity of water may not be available. In fact, it may not be any easier to obtain 600 acre-feet per year than to obtain 900 acre-feet per year. However, if the water

can be obtained, the process would result in a somewhat less of a loss of that quantity of water from the overall current water balance in the area. However, specific, localized impacts cannot be determined or even compared between the two projects since it is not yet known where wells would be drilled, etc.

Also, Alternative C assumes an additional need for deep brine wells and shallow intercepting ditches, with approximately 15,000 acre-feet per year of briny water consumption. These wells and ditches would need to be placed either within or in very close proximity to the lake bed. Similar considerations and study as described above for Alternative A would still need to be undertaken. However, a loss of 15,000 acre-feet per year would be substantially less than the 120,000 projected under Alternative A.

This development scenario also results in physical alterations of the lakebed within the floodplain, though less than under Alternative A. Up to 100 miles of ditches, 60 miles of berms, and 10,000 acres of ponds could be constructed within the floodplain. Because, according to **Section 2.5**, the entire 96,000 acre lease area would still be used, it appears that these ditches and berms would be spread throughout the area of the lakebed that would be leased, and similar impacts as discussed for Alternative A would apply.

Potential effects to surface water and groundwater quality would be the same as described for Alternative A.

4.2.3.8 Wetlands and Riparian Areas

There would be no direct effects on riparian vegetation or wetlands, because no on-the-ground activities would take place. There would be no alteration of the hydrologic regime, no disturbance of soils, and no disturbance of vegetation.

There would be no expected indirect impacts to wetlands with vegetation or riparian areas under Alternative C, because no wetlands with vegetation or riparian areas are known to occur in the proposed leasing areas. The lease area of concern for possible riparian impacts, Tract No. 49, in Section 8 of T. 20 S., R. 10 W. is not included in Alternative C.

4.2.3.9 Wildlife

Impacts to wildlife would be similar to those described under Alternative A, but any traffic-related effects would be less due to the lower production/transport figure, and longer in duration over time due to the extended life of the project (24 years as opposed to 6.5 years under Alternative A).

4.2.3.10 Residual Impacts under Alternative C

Residual impacts under Alternative C would be the same as those described for Alternative A.

4.3 Cumulative Impacts Analysis

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Cumulative impacts could only occur for those resources that are 1) affected by the Proposed Action and 2) affected by other actions whose impacts occur within the same area and timeframe.

The resources analyzed above in Chapter 4 that have the potential to be adversely impacted by the Proposed Action include cultural resources, water resources, and migratory birds and other wildlife. Air quality is expected to benefit overall from the implementation of the Proposed Action, so is not included here. The cumulative impacts area (CIA) is typically a resource-based area.

The cultural resources CIA is defined as the area of the Class I inventory, which includes a one-mile buffer outside the Sevier Lake potash leasing area.

The watershed provides a reasonable area to review cumulative effects to water resources; the water resources analysis is provided summarily below.

The CIA for migratory birds and wildlife is defined as the Sevier Lake potash leasing area plus an approximate 5-mile buffer.

The purpose of this cumulative impacts analysis is to describe the interaction among the effects of the proposed action and the various past, present, and reasonable foreseeable future actions.

4.3.1 Past and Present Actions:

Past or ongoing actions that have affected or currently affect the same components of the environment as the Proposed Action are:

- Water – natural fluctuations in water levels (see **Section 3.3.7**)
- Water diversions from the Sevier River for agricultural irrigation, which have reduced inflows to Sevier Lake (see **Section 3.3.7**)
- Water diversions for commercial uses, domestic uses, and other uses (see **Section 3.3.7**)
- Previous exploration and commercial fertilizer operations by Crystal Peak and Salada (see **Appendix C**)
- Nearby development of Milford Wind power line corridor and wind farm (See Milford Wind Corridor Project EA).

4.3.2 Reasonably Foreseeable Action Scenario (RFAS)

The following RFAS identifies reasonably foreseeable future actions that would cumulatively affect the same resources in the cumulative impact areas as the Proposed Action and Alternatives. Reasonably foreseeable future actions in association with Sevier Lake potash leasing include construction of a power line, natural gas pipeline, access road, and other facilities as described in **Section 2.2**. There are currently no known plans to construct other mines, oil or gas wells, geothermal wells, or other industrial or land use projects within the CIA.

- **Holly UNEV Energy Pipeline (Wildlife)** – The Holly UNEV Energy Pipeline is scheduled to pass through Millard County. It will run along the western edge of Delta and tie into Highway 257 continuing into Beaver County. In general, direct impacts to wildlife from this project would consist of direct mortality or injury (primarily for smaller, less mobile wildlife), habitat loss, habitat fragmentation, and displacement into adjacent habitat and impacts from noise and human presence associated with construction activities. Indirect impacts to wildlife would include increased access/predation facilitated by project roads, habitat losses from the invasion of invasive plant species, or other habitat changes that impact species at a later time (after project completion) and that can be attributed to the proposed pipeline disturbances. If construction for both projects were to occur at the same time, wildlife impacts such as displacement could be exacerbated due to the proximity of the projects.
- **Magnum Gas Storage Project (Surface Water Use)** – A gas pipeline and storage project is proposed for construction between Elberta and Delta. An interagency environmental document is in the process of being prepared for the Magnum Gas Storage Project. During the construction phase, large quantities of water would be used to create four storage caverns. The proposed action includes a change of application from current pumping of groundwater from shallower wells in basin fill and carbonate aquifers to the pumping of groundwater in deeper aquifers more than 1,600 feet below the earth's surface. If the project is implemented as planned, there is the potential for a small increase of stream flows in the Sevier River if water rights are diverted from shallow wells to deeper wells for the formation of storage caverns. This phase of the project is anticipated to last about eight years.
- **Transwest and PacifiCorp Energy Gateway South Transmission Line Projects (Cultural Resources, Water Resources, Wildlife)** – In the vicinity of the Lease Area, a segment of this project would generally follow US-50/6 route from Delta to the Sevier Lake area and then angle southwest to the Nevada border. Its development would simplify access to electricity and natural gas for development on the Lease Area. There could be negative impacts to wildlife resources, such as those described under the Holly UNEV Energy Pipeline, if development of the two projects occurred at the same time.

- Private Land Actions – Private lands could be modified or developed within the cumulative impact assessment area, but Millard County officials are not aware of any sizeable development on private lands other than those mentioned previously.

4.3.3 Cumulative Impacts

Cultural Resources: Only the Transwest and PacifiCorp Energy Gateway South Transmission Line Projects of the above listed RFAS would occur within the cultural resources CIA. Cumulative impacts to cultural resources would be similar to those described above for Alternative A, since minimal activity is known to have occurred or is proposed for the leasing area. All proposed RFAS would be completed under the oversight of Section 106 of NHPA if there were a federal nexus and thus project impacts would be individually addressed. The effects of adding the Leasing Proposal to existing cultural resource disturbances would be negligible. A further assessment of cumulative impacts including specific off-lease activity would be made under the proposed development plan.

Water Resources: Agricultural interests have greatly altered the hydrologic regime associated with lower Sevier River and Sevier Lake for more than 100 years. This is expected to continue for the long term future, thus the hydrology of Sevier Lake is and will continue to be impacted regardless of whether the lakebed is leased and developed for potash production. The lakebed has been the site of fertilizer production activities in the past – remnants of associated structures remain in the lake’s floodplain. Any proposed operations that result from leasing would further affect an already artificially functioning surface/groundwater system.

The proposed Magnum Gas Storage Project would consume groundwater from the carbonate aquifer that underlies the basin-fill aquifer from which it is presumed that the potash development would draw. Similarly, Nevada’s Snake Valley Groundwater Project involves the extensive carbonate aquifer. As noted in **Section 3.3.7**, the basin-fill and carbonate aquifers are thought to be interrelated. Specific cumulative effects cannot be predicted at this stage of environmental analysis. However, for the purposes of analysis, the most likely trend is anticipated to be towards higher stream flows over the estimated eight-year period of cavern formation by Magnum, and possibly beyond this period – especially if the lessee of the solid minerals lease parcels at Sevier Lake buys water rights for points at or adjacent to the Sevier River and changes points of diversion to Sevier Lake. One trend that could lower stream flows is if water rights for water diverted from the Sevier River are exercised more efficiently.

Wildlife and Migratory Birds: It is unlikely that there would be cumulative impacts to wildlife in the area. The other past, present or reasonable foreseeable actions generally do not affect the same resources as the Proposed Action, and in the event they do (ROW development), the incremental impacts from the Proposed Action would be small.

5.0 CONSULTATION AND COORDINATION:

5.1 Introduction:

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. **Appendix A** provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in **Sections 5.2** and **5.3** below.

5.2 Persons, Groups, and Agencies Consulted:

Table 5-1 List of all Persons, Agencies and Organizations Consulted for Purposes of this EA

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Utah SHPO	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	SHPO has approved by letter of concurrence dated May 12, 2010. (Refer to Appendix B)
Paiute Tribe of Utah, Kanosh Band of the Paiute Tribe, Confederated Tribes of the Goshute Reservation, Skull Valley Goshute Tribe, Uintah Ouray Ute Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	BLM initiated Native American consultation on a government-to-government basis on May 7, 2010. BLM FFO sent a letter and the Class I Inventory Report (Baxter, 2010) to Native American Tribes inviting them to comment on the project and to provide assistance in identifying properties of traditional, religious, or cultural importance that may be impacted by the project. The letter was sent to the Paiute Tribe of Utah (PITU), Kanosh Band of the Paiute Tribe, Confederated Tribes of the Goshute Reservation, Skull Valley Goshute Tribe, and Uintah Ouray Ute Tribe. Follow-up calls were made to the tribes.
U.S. Army Corps of Engineers	Initial contacts made with the USACE. The project would require a permit from the USACE under authority of Section 404 of the Clean Water Act (33 USC 1251)	Project development would be subject to 404 permitting.
UDWR	Consult with UDWR as the agency with expertise on impacts on game species.	Data and analysis regarding big game species incorporated into Chapters 3 and 4.

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
USFWS	Consultation under the Fish and Wildlife Coordination Act	Recommendations provided for preventing loss of or damage to wildlife resources incorporated into lease stipulations.
Great Basin National Park	Consultation initiated with Great Basin NP	Fugitive dust was noted as a concern; the lakebed and any structures on it would not be visible from the Park.
Millard County	Coordination with Millard County Planning and Zoning Administrator	Project development would be subject to Millard County ordinance and require a Conditional Use Permit

5.3 Summary of Public Participation:

The leasing project was posted on the BLM’s Environmental Notification Bulletin Board (ENBB) January 22, 2010. One public scoping comment was received by the BLM as a result of this posting; the comment was a request by the Southern Utah Wilderness Coalition (SUWA) for a copy of the EA. In addition, a representative of SUWA met with the BLM State office in June 2010 to express concerns over indirect effects to areas with wilderness characteristics. No other public comments were received by the BLM as a result of the ENBB posting. Consultation and coordination is summarized above.

A public comment period on this EA extended from September 20, 2010 to October 20, 2010. Comment letters were received from several groups and agencies as follows: SUWA, Audubon Society, Utah Clean Air Alliance, University of Utah Cosmic Ray Group, Environmental Protection Agency, U.S. Fish and Wildlife Service. Other comments were received via email, as described in **Appendix E**. BLM reviewed the comment letters and emails and formulated a list of specific comments. The specific comments and BLM responses are provided in **Appendix E**.

5.4 List of Preparers

5.4.1 BLM

Name	Title	Responsible for the Following Section(s) of this Document
Fillmore Field Office		
George Cruz	Utah Natural Resource Specialist, Hydrologist	Project Lead
Matt Rajala	NEPA Coordinator	Areas of Critical Environmental Concern, Climate Change, NEPA oversight, Air Quality, Environmental Justice,
Steve Bonar	Outdoor Recreation Planner	Recreation
Paul Caso	Rangeland Management Specialist	Range, Soils, Water Rights
Teresa Frampton	Realty Specialist	ROW Lease Acreage
Joelle McCarthy	Archeologist	Cultural Resources and Native American Religious Concerns
Jim Priest	Wildlife Biologist	Wildlife Biology, Threatened, Endangered, Sensitive Species
R. B. Probert	Weed Specialist	Vegetation
Erin Rajala	Outdoor Recreation Planner	Recreation review
Bill Thompson	Rangeland Management Specialist	Wetlands, Range
Sheri Wysong	Planning and Environmental Coordinator	NEPA Lead
BLM State Office		
Stan Perkes	Mining Engineer	State Project Lead
Roger Bankert	Minerals Branch Chief	Project Consultation
Greg Thayn	Environmental	NEPA Review

Name	Title	Responsible for the Following Section(s) of this Document
	Protection Specialist	

5.4.2 Non-BLM Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Linda Matthews	Project Manager, Biologist	Overall QA; Wildlife Resources; Rangeland Standards; Minerals
Karla Knoop	Hydrologist	Water Resources, Wetlands & Riparian
Jenni Mahoney Prince-	Senior NEPA Specialist, Archaeologist	Cultural Resources
Jon Schulman	Environmental Engineer, Hydrologist	Socio-Economics; Climate Change
Marit Sawyer	Environmental Specialist	Livestock Grazing; Air Quality

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6.2 List of Acronyms Used in this EA

AO	Authorizing Officer
BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
BMP	Best Management Practice
BRAC	Blue Ribbon Advisory Council on Climate Change
CCC	Civilian Conservation Corps
CPMC	Crystal Peak Minerals Corporation
CFR	Code of Federal Regulations
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENBB	Notification Bulletin Board
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FFO	Fillmore Field Office (BLM)
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
GBRM	Great Basin/Rocky Mountain Region
GLO	General Land Office
LLC	Limited Liability Corporation
MBTA	Migratory Bird Treaty Act
MLA	Mineral Leasing Act
MOP	Muriate of Potash
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OPB	Utah Governor's Office of Planning and Budget
ORV	Off-Road Vehicle

RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right of Way
SHPO	State Historic Preservation Office
SITLA	School and Institutional Trust Lands Administration
SOP	Sulfate of Potash
TCP	Traditional Cultural Property
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
UAC	Utah Administrative Code
UDAQ	Utah Division of Air Quality
UDEQ	Utah Division of Environmental Quality
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Water Resources
UDWRi	Utah Division of Water Rights
UNHP	Utah Natural Heritage Program
USACE	United States Army Corps of Engineers
USBL	United States Bureau of Labor Statistics
USCB	United States Census Bureau
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USIAC	United States Interagency Advisory Committee on Water Data
VRM	Visual Resource Management
WPA	Works Progress Administration
WRCC	Western Regional Climate Center
WSRA	Warm Springs Resource Area

APPENDIX A

Interdisciplinary Team Analysis Record Checklist

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Sevier Lake Competitive Potash Leasing

NEPA Log Number: DOI-BLM-UT-W020-2010-014-EA

File/Serial Number:

Project Leader: George Cruz

This checklist will be used to write the EA analyzing the offering of 64 potash lease parcels (approximately 125,762 acres) at Sevier Lake under the solid minerals program. The proposed lease stipulations are attached.

DETERMINATION OF STAFF: *(Choose one of the following abbreviated options for the left column)*

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Determination	Resource	Rationale for Determination*	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
PI	Air Quality	<p>The act of leasing would not authorize any actions other than conveying the rights and therefore would not have any direct impacts. However, under the RFD ground disturbing activities on and off lease have the potential to create fugitive dust. Any approved actions would require a dust control plan. Sevier Dry Lake constitutes a large source of dust during high wind events. Flooding of the lake surface would reduce the amount of dust that the area witnesses during these wind events.</p> <p>However, if farmland was to be taken out of production due to diversion of irrigation water, there could be increased dust from these areas.</p> <p>Millard County is currently an attainment area</p>	/s/ Sheri Wysong	8/3/2010

Determination	Resource	Rationale for Determination*	Signature	Date
		for NAAQS. The Intermountain Power Project (IPP) is the predominant point source for non-particulate criteria pollutants. Criteria pollutants emitted by development activities would negligibly add to those emitted by IPP, and it's unlikely the operation would require a PSD permit. Nor are there any Class I areas likely to be affected by the proposal.		
NP	Areas of Critical Environmental Concern	There are no ACEC's located within the lease area. The Warm Springs Resource Management Plan, April 1987, Map #5 identifies 6 ACECs. These ACEC's are not located within the leasing area or in areas likely to be utilized for ROWs. The ACECs closest to the leasing area are Notch Peak and Fossil Mountain, both of which are 8 or more miles from the lease area, to the west and northwest.	/s/SBonar	8/3/10
PI	Cultural Resources	<p>Results from the Class I file search indicate there have been 17 previous cultural resource inventories within a one-mile perimeter of the proposed potash leasing area.</p> <p>Twenty-five previously recorded archaeological sites are present in the study area (within 1 mile of the proposed potash leasing area). All of these sites are located along the northeastern margins of Sevier Lake near the mouth of the Sevier River; 15 of these sites are located within the boundary of the Sevier Lake potash leasing area, 10 are located on lands outside the leasing area.</p> <p>A total of nine sites are unevaluated for the NRHP, four are NRHP-eligible, and two of these sites have been recommended ineligible for the NRHP.</p> <p>By adding the cultural stipulation, the proposed lease offering will have No Adverse Effect to Historic Properties. SHPO concurred with this determination on May 12, 2010.</p>	/s/ Joelle McCarthy	8-10-10
NI	Greenhouse Gas Emissions	Other than water vapor, this project would not contribute a meaningful quantity of greenhouse gases to the atmosphere. Water vapor	/s/ Sheri Wysong	8/3/2010

Determination	Resource	Rationale for Determination*	Signature	Date
		contributions would be transitory and would not be expected to contribute to climate change.		
NP	Environmental Justice	There are no minority or low income populations that would be disproportionately impacted by the proposed action.	/s/ Matt Rajala	3/8/2010
NI	Farmlands (Prime or Unique)	There are no prime or unique farmlands within the proposed lease area. The city of Delta and other surrounding communities are located several miles north and east of the project area. The economies of these communities are largely agricultural (i.e. farmlands) in nature and rely heavily on both groundwater and Sevier River water. Should water be diverted from agricultural use to mineral extraction, previously irrigated farmlands would no longer be considered prime or unique (7CFR657.5(a)(1) & 7CFR657.5(b)(1)) nor contribute to the local economy. This impact is considered in the Socioeconomics section of the document.	/s/ Paul Caso	1/28/10
NP	Fish Habitat	There is no fish habitat present in the proposed lease area or in areas likely to be used for ROW development under the RFD.	Jim Priest via email	3/25/2010
PI	Floodplains	All of Sevier Lake up to the 100-year flood mark can be classified as floodplain as defined in Executive Order 11988 on Floodplains. For details, see the hydrology technical report.	/s/ George Cruz	1/27/10
NP	Fuels/Fire Management	No Impacts to Fire/Fuels	/s/ Justin C Johnson	2/1/10
NI	Geology / Mineral Resources/Energy Production	The permanent loss of potassium sulfate from the mineral estate, if the lessees of the lakebed produce fertilizer, is discussed in the proposed action and purpose and need in the EA. It does not need to be analyzed as a resource issue in chapter 4 of the EA.	/s/J Mansfield	8/10/10
NI	Invasive Species/Noxious Weeds	Because the mitigation measure identified in the attachment is applied as a stipulation in the EA, there would be no impacts. This	R.B. Probert	2/1/10

Determination	Resource	Rationale for Determination*	Signature	Date
		mitigation measure requires that equipment be cleaned prior to entering the project area.		
NI	Lands/Access	<p>The project, as proposed, would not affect access to public lands. In the event that rights-of-ways i.e., wells, pipelines, transmission lines, etc would be necessary during leasing; the project would need to be planned in a manner that public access would not be limited.</p> <p>Existing roads and trails would be used to access the project area unless otherwise authorized.</p> <p>The following stipulation is included in the EA: During wet road conditions, any ruts deeper than four inches remaining on the roads from the project would be repaired at the Authorized Officer's discretion.</p> <p>The proposed project would be subject to valid prior existing rights-of-way (ROW). ROW holders should be contacted and coordinated with, if the proposed project affects any existing ROWs. (See attached Realty/Access report).</p>	/s/ Teresa Frampton	1/27/10
PI	Livestock Grazing	<p>Cattle and sheep grazing occur on lands surrounding Sevier Lake; the lakebed itself is not managed for grazing due to lack of forage. The Sevier Lake potash leasing areas include about 8,000 acres in the corners of several allotments. These areas support very sparse vegetation with poor forage; value, due to the low elevation, aridity and proximity to the salty Sevier Lake playa. No measureable direct effects to the forage resource would occur on lease. Livestock water sources would be protected by a lease stipulation. There could be indirect effects to livestock use due to ROW development. There could be safety issues for livestock due to increased road traffic under the RFD.</p>	/s/ Paul Caso	2/8/10
PI	Migratory Birds.	Migratory birds, primarily shorebirds and waterfowl, seasonally may be attracted to open water habitat created by evaporation	James Priest	

Determination	Resource	Rationale for Determination*	Signature	Date
		pond operations. Birds landing on these ponds can become encrusted with salt and may drown. Birds that preen their feathers can become sick or die to ingesting too much salt. Birds may also suffer from cold stress as the salt crystals reduce the insulating ability of the feathers (www.fws.gov/mountain-prairie/contaminants/contaminants3.html).		
NI	Native American Religious Concerns	BLM initiated Native American consultation on a government-to-government basis on May 7, 2010. BLM FFO sent a letter and the Class I Inventory Report (Baxter, 2010) to Native American Tribes inviting them to comment on the project and to provide assistance in identifying properties of traditional, religious, or cultural importance that may be impacted by the project. The letter was sent to the Paiute Tribe of Utah (PITU), Kanosh Band of the Paiute Tribe, Confederated Tribes of the Goshute Reservation, Skull Valley Goshute Tribe, and Uintah Ouray Ute Tribe. Follow-up calls were made to the tribes. Once a plan of operations is received, the BLM will reopen consultation.	/s/ Joelle McCarthy	8-10-10
NP	Paleontology	No known significant paleontological resources occur at the site of the proposed lease offering or in surrounding areas that could be used for ROW development.	/s/J Mansfield	1/28/10
NI	Rangeland Health Standards	No impacts to Rangeland Health Standards are expected as a result of the leasing action or RFD. Vegetation is sparse; the surface disturbances would be reclaimed according to stipulation. For these reasons, there would be no effects to Rangeland Health Standards.	/s/ Paul Caso	2/8/10
NI	Recreation	Typically the Sevier Lake bed has had limited activity. This lakebed is generally dry during most of the year and receives minimal casual recreation use. During years when it has an unusually high amount of run-off and/or standing water the lakebed can become soft and/or muddy and inappropriate for any casual and motorized recreation until the lakebed is completely dry.	/s/SBonar	8/3/10

Determination	Resource	Rationale for Determination*	Signature	Date
		Motorized OHV activity in the Cricket Mountains would not be affected by this project.		
PI	Socio-Economics	The act of leasing would not authorize any actions other than conveying the rights and therefore would not have any direct impacts. Actions under the RFD would bring jobs and money to the local area. Transfer of water rights from agricultural to mineral extraction use could decrease the area of irrigated fields which would have impacts on the local economy.	/s/ Sheri Wysong	8/20/2010
NI	Soils	No impacts to soils are expected as a result of the lease itself. The lake bed itself is too salty to provide a growth medium for vegetation. However, soils may be disturbed for off-lease Rights-of-Way. The standard stipulations for ROW are adequate to mitigate these impacts..	/s/ Paul Caso	2/8/10
NI	Threatened, Endangered, Candidate or Special Status Plant Species	The lease stipulations call for surveys prior to development and are adequate to protect the resource.	/s/DWhitaker	2/1/10
PI	Threatened, Endangered, Candidate or Sensitive Animal Species	<p>The California condor, Greater sage grouse, Least Chub, and Utah prairie dog are threatened, endangered or candidate species identified by the USFWS to occur within Millard County. After further review and consideration of the species home ranges and habitat requirements, the FFO finds that these species do not occur within or reasonably near the proposed action and conclude a “no effect” determination for these species. No further analysis is required.</p> <p>Special status species such as raptors, are known to occur within the vicinity of the proposed action. Species include but are not limited to, golden eagles, Ferruginous hawk, prairie falcon, burrowing owls and others. Raptors are protected under BLM <i>Best Management Practices for Raptors and Their Associated Habitats in Utah</i> 2006. Indirect</p>	James Priest	

Determination	Resource	Rationale for Determination*	Signature	Date
		impacts associated with construction and operations (ex. increased noise, traffic, humans) may impact foraging, roosting, breeding, and nesting behavior.		
NI	Wastes (hazardous or solid)	<p>With the following stipulations included in the EA, this resource can be determined to have no impacts:</p> <p>*All waste must be removed and all hazardous materials used or produced must be reported to the FFO.</p> <p>*Waste certification stipulation as stated in the EA.</p>	/s/ B.Crosland	8/10/10
PI	Water Resources/Quality (drinking/surface/ground)	Several new wells have been identified as being necessary for mineral extraction. Because of the large amount of water that will be required, there is a potential for harm to existing BLM water rights in the project area. The lease stipulations call for analysis of water resources and monitoring for effects to water right holders. Stipulations also call for replacement of water resources to maintain existing uses such as livestock, agricultural, and wildlife.	/s/ Paul Caso	2/8/10
PI	Wetlands/Riparian Zones	<p>Although portions of the Sevier lakebed are often saturated at or very near the ground surface such that the hydrologic and the soils criteria for wetland designation may be present on the lakebed, the vegetation component is lacking. Because all three of these environmental parameters (hydrology, soil, and vegetation) must support a wetland determination, there are no defined wetlands associated within the lakebed, and no defined wetlands known within the lease area.</p> <p>There is no riparian vegetation on the Sevier lakebed. There is an area of low value riparian along the river bank and lake edges where the Sevier River enters the lake. This habitat has undergone beetle treatment to kill the Tamarisk. The few identified riparian areas (RMP Map 3) on lands near Sevier Lake include one site on the</p>	/s/ Bill Thompson	2/9/2010

Determination	Resource	Rationale for Determination*	Signature	Date
		northern end of Sevier Lake and additional sites to the northeast of the project area, one site in the Cricket Mountains and one site in the San Francisco Mountains. It is possible that there are isolated riparian areas associated with springs that are outside of the lakebed and outside of the proposed lease areas, but nearby. However, the potential for indirect effects to off-lease wetlands or riparian areas is small since activities that are proposed under the RFD could likely be designed to avoid any wetlands or riparian areas.		
NP	Wild and Scenic Rivers	There are no Wild & Scenic rivers listed in Public Law 111.11.	/s/SBonar	2/8/10
NP	Wilderness/WSA	The Utah Wilderness Inventory of 1999 identifies five WSA's within the Warm Springs Resource Management Plan, April 1987. From two of these WSA's, King Top and Notch Peak, the project could be seen from a high elevation. The intent of the 1964 Wilderness Act, Public Law 93-22, does not provide for "buffers" to limit or restrict viewing from areas outside WSA boundaries or to restrict or limit other activities in the surrounding areas. There are no Wilderness/WSA's within the project area.	/s/SBonar	2/8/10
PI	Wildlife Excluding USFW Designated Species	Negligible habitat value exists on the Sevier Lake hardpan specifically. Review of Utah Division of Wildlife Resources heritage data base identifies substantial to critical habitat value for pronghorn and mule deer around the perimeter of the lake and the surrounding area. Indirect impacts associated with construction and operations (ex. increased noise, traffic, humans) may impact movement patterns, foraging, and breeding behaviors.	James Priest	
NI	Woodland / Forestry	There are no woodland species on the lakebed. Pinon/Juniper may be affected by off lease ROWs, but not to an extent that detailed analysis is necessary.	/s/ B.Crosland	1/26/10

Determination	Resource	Rationale for Determination*	Signature	Date
NI	Vegetation Excluding USFW Designated Species	The lease stipulations call for surveys prior to development and are adequate to protect the resource. Vegetation may be affected by ROW development, but typical reclamation measures would minimize this impact such that a detailed analysis is not required in this EA.	/s/DWhitaker	2/1/10
PI	Visual Resources	<p>Bureau Manual -8400 provides the authority for development and implementation of Visual Resource Management of public lands. The Warm Springs Resource Management Plan, April 1987, defines the VRM management classes for this plan. The project area is within a VRM Management Class IV and meets the requirements of the Land Use Plan.</p> <p>The project area is bounded on the north end of the lakebed by US Highway 6/50. The project area on the south end of the lakebed is bounded by Blackrock Road. Traffic on the north end would be unlikely to see a large portion of the project area. The project would probably be more visible by traffic on the south end, however traffic in this area is sparse and limited to a few local residents and casual travelers in the area.</p> <p>Visual resources are evaluated as part of activity and project planning and consider the visual sensitivity of the affected area. Recent visual resource inventories have indicated that the project area would rate as VRM Inventory Class III. Development of the lakebed could result in an increase of a future VRM Inventory rating as Class IV (see page 6 of BLM Manual Handbook 8410-1 for an explanation of assignment of inventory classes).</p>	/s/SBonar	8/3/10
NP	Wild Horses and Burros	There are no Wild Horse HMAs within the lease area. The closest HMA is the King Top HMA, whose eastern boundary is about 8 miles west of the lease area. No wild horse or burro habitat occurs in areas likely to be utilized for ROWs.	/s/ Eric Reid	2/3/10
NP	Areas with Wilderness	Areas in the mountains directly to the east and	/s/SBonar	2/15/11

Determination	Resource	Rationale for Determination*	Signature	Date
	Characteristics	<p>west of Sevier Lake have been identified by some interested publics as having wilderness characteristics. However, none of them have been mapped as WIAs (1999 Wilderness Inventory Area) or have had RPDs (Reasonable Probability Determination - areas determined to have a likelihood of possessing and retaining wilderness characteristics).</p> <p>However, they are included in the Red Rocks Wilderness Proposal. Because the 1964 Wilderness Act, Public Law 93-622, does not provide for protection outside of WSA boundaries the identification of possible wilderness characteristics “buffers” should not be a limiting factor for this project.</p> <p>In January 2011 a complete wilderness character inventory was completed by the Fillmore Field Office. The results of this inventory showed that the area did not meet the requirements as set forth in the 1964 Wilderness Act and most recently requirements set forth in the Interior Secretary’s Order #3310 and the area was determined to “not” have wilderness character.</p>		
PI	Other: Hydrologic Conditions	<p>Potential impacts to the surface and groundwater hydrologic characteristics are discussed in the EA. The hydrology technical report has been used as a reference. Groundwater stipulations have been incorporated into the EA requiring 1) monitoring of groundwater levels and 2) replacement water for resources, such as livestock use, if impacted by lowered groundwater levels.</p>	/s/ George Cruz	2/4/10

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments/
Environmental Coordinator	/s/ Cindy Ledbetter	2/16/2011	

Authorized Officer	/s/ Michael Gates	2/16/2011	
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APPENDIX B

Resource Clearance Documents:

Noxious Weeds

Threatened, Endangered, and Sensitive Plants

Realty/Access Report

Hydrology Report

Cultural Report

Sevier Lake Production Report

Noxious Weed Clearance Fillmore Field Office

Date: 2/1/10

Examiner: R.B. Probert

Project Name: Sevier Lake Non Competitive Lease

Project Location: See Proposal

County: See proposal

General Comments and Background: Noxious weeds are those exotic plant species having noxious characteristics and are of economic and/or environmental significance. Noxious weeds are designated and regulated by various State and Federal laws.

Invasive weeds are exotic species that have become naturalized in a location to levels that total control is infeasible due to extensive weed establishment and/or treatment costs.

In Millard County the following species have been identified and documented: White top also known as Hoary Cress (*Cardaria draba*), Squarrose knapweed (*Centaurea virgata*), Russian knapweed (*Centaurea repens*), Scotch thistle (*Onopordum acanthium*), Musk thistle (*Carduus nutans*), Perennial pepperweed (*Lepidium latifolium*), Spotted knapweed *Centaurea maculosa*, and Purple loosestrife (*Lythrum salicaria*).

In Juab County the following species have been identified and documented: White top also known as Hoary Cress (*Cardaria draba*), Squarrose knapweed (*Centaurea virgata*), Russian knapweed (*Centaurea repens*), Scotch thistle (*Onopordum acanthium*), Musk thistle (*Carduus nutans*), Leafy spurge (*Euphorbia esula*), Perennial pepperweed (*Lepidium latifolium*), Spotted knapweed *Centaurea maculosa*, Purple loosestrife (*Lythrum salicaria*), and Dalmation toadflax (*Linaria genistifolia*).

Presently these species have not been documented within Juab or Millard counties. They are a concern due to locations in surrounding areas. Species of concern are Black henbane (*Hyoscyamus niger*), Camelthorn (*Alhagi pseudalhagi*), Yellow starthistle (*Centaurea solstitialis*), Diffuse knapweed (*centaurea diffusa*), and Poison hemlock (*Conium maculatum*).

Noxious Weeds Located Within Project Area: There are no known noxious weeds located within the project area.

Mitigation: To eliminate the spread of noxious/ invasive weeds throughout the field office area one or both mitigation measures will be implemented:

- 1- (x) Equipment will be cleaned prior to entering the proposed project area to minimize the introduction of noxious/invasive weeds in other areas.
- 2- () Equipment will be cleaned prior to exiting the project area.

Date//

Signature//

Threatened, Endangered & Sensitive Plant Clearance

Fillmore Field Office

DATE: February 1, 2010

EXAMINER: David Whitaker

PROJECT NAME: Sevier Dry Lake Competitive Potash Leasing

PROJECT LOCATION: Sevier Dry Lake Bed

RESOURCE AREA: Fillmore Field Office

VEGETATION TYPE: none

Description of Field Work: Literature search of the Fillmore BLM library and Richfield Field Office information.

Reference Sources: -Utah's Rare Plants Revisited (Great Basin Naturalist Vol.45, No.2)

-Plants From Millard County (BYU 1980)

-MX Final Report 1980

-1991 Habitat Survey, House Range R.A.

-1991 Habitat Survey, Warm Springs R.A.

-others

General Comments:

BLM land within the Fillmore Field Office contains no plant species that are federally listed as Threatened, Endangered, or Proposed as such. Therefore, there is no effect on any threatened or endangered plant population.

There are several plants designated as BLM sensitive species in the Fillmore Field Office area. However, none of these plant species are known to occur on the Sevier Dry Lake bed. As such, no impacts to those species are anticipated.

Threatened, Endangered, or Sensitive Plants Yes___ No X

(List if Yes):

***Realty/Access Report**

Teresa Frampton, Realty Specialist

January 27, 2010

Sevier Lake Competitive Leasing Project

NEPA # DOI-BLM-UT-W020-2010-014-EA

Project Location: **Millard County**

T. 20 S., R. 11 and 12 W.,

T. 21 S., R. 11 and 12 W.,

T. 22 S., R. 11 and 12 W.,

T. 23 S., R. 12 W.

Mitigation Measures:

- Existing roads and trails would be used for travel to the maximum extent feasible unless otherwise authorized. During wet road conditions, any ruts deeper than four inches remaining on the roads from the project would be repaired at the Authorized Officer's discretion.
- Generated trash/debris should be removed from public land and discarded at an authorized facility.
- The proposed project would be subject to valid prior existing rights-of-way (ROW). The Master Title Plat (MTP) and LR2000 Geo Report show an existing ROW within the project area. The proposed project is subject to this existing ROW. This ROW holder should be contacted and coordinated with **if** their ROW would be affected by this project.

Rights-of-way in the project area

UTU-0133566

PacifiCorp dba Rocky Mountain Power

1407 W. N Temple #110

Salt Lake City, UT 84116

/s/ Teresa Frampton

Technical Report

Specialist: George Cruz

Resource: Floodplains and Hydrology

Title of Proposed Action: Sevier Lake Potash Competitive Potash Leasing

NEPA Number: DOI-BLM-UT-W020-014-EA

ID Checklist Attachment Number:

Date: February 3, 2010

This technical report discusses floodplains management and hydrology as they relate to the proposed offering of lease parcels at Sevier Lake as solid mineral parcels.

All of Sevier Lake up to the 100-year flood marks can be classified as a floodplain as defined in Executive Order 11988 on Floodplain Management. While the ditches and evaporation ponds that may be proposed or reconstructed - if sold leases are developed - would not have a noticeable impact on the flooding characteristics within this floodplain, major flooding events could result in damage to ditches and/or evaporation ponds. If an application is submitted to extract salts, there are practices that be proposed that may modify the potential effects of major flooding.

Surface and groundwater hydrology are major topics of importance for this project. Hydrology is not necessarily a major factor when considering solely the offering of lease parcels, but does take on major importance when generically discussing the different operations and structures within Sevier Lake and around the lake that may be proposed if the parcels are sold and the lessees decide to submit an application to initiate commercial operations at Sevier Lake.

Affected Environment:

- All of Sevier Lake up to the 100-year flood marks can be classified as a floodplain as defined in Executive Order 11988 on Floodplain Management. Impacts from flooding tend to be greater at the north half of Sevier Lake and lesser at the southern half of the lake.

- Flooding at bank full stage approximately once every two to three years has ordinary, predictable impacts on surface and groundwater/subsurface hydrology and the water levels in the lake.

- Flooding during 5 to 10 year flood events can have greater impacts - particularly at the north half of Sevier Lake, but overall impacts tend to still be about ordinary and predictable with the water levels being a little higher. There may be a small recharge of the groundwater, but there are also processes at work that tend to attach the percolating water to the higher concentrations of salts and brine at Sevier Lake. These processes may include capillary action where there are clays to finer soils at the lake bottom and processes similar to osmosis or exchange of water molecules where water is drawn to areas of higher salt concentrations.

■25 to 100+ flood events tend to have a significant effect on water levels and surface hydrology over the entire surface of Sevier Lake. Floods of these magnitudes are considered to be major flood events. The potential for and quantity of recharge of the groundwater would be greater during these major flood events.

●Water inflows to Sevier Lake:

■Natural water levels in the Sevier River are perennial, but can be greatly reduced by water diversions during the agricultural irrigation season such that stream flows from the Sevier River into the north end of Sevier Lake can be greatly reduced.

■The Sevier River has the highest rates of inflow to Sevier Lake.

■Surface water levels at the lake are proportional to the seasonal inflows.

■The north half of Sevier Lake has higher water levels.

■Inflows to Sevier Lake are most reliable from April to September. Yet, the north half of Sevier Lake can have very low water levels or can be dry from about June or mid-July until the snowmelt period begins in late winter to early spring.

■Inflows from the Sevier River and other sources maintain surface water levels at Sevier Lake, and can recharge the groundwater and help to maintain or elevate subsurface levels around the lake.

●Inflow of dissolved salts and other solutes into Sevier Lake may decline as better land management practices reduce concentrations of total dissolved solids in the Sevier River.

■*Utah's 2002 303(d) List of Impaired Waters* includes five long segments of the Sevier River in the Middle and Lower Sevier Sub-basins that were not meeting Utah water quality standards for total dissolved solids and other parameters. In addition, four major tributaries (Salina Creek, Lost Creek, Chicken Creek, and Petersen Creek) and a group of east side tributaries from the Rocky Ford Reservoir to the Annabella diversion were listed for not meeting water quality standards for total dissolved solids.

■The *TMDL Water Quality Study of the Middle and Lower Sevier Watershed* (2004) discussed segments of the Sevier River and its tributaries that were listed in *Utah's 2002 303(d) List of Impaired Waters*. The study included recommendations to reduce concentrations of total dissolved solids and other water quality parameters. Some of these practices have already been implemented.

■The Upper Sevier River, East Fork of the Sevier River, and the San Pitch River Sub-basins have had similar 303(d) listings for impaired waters and subsequent TMDL (total mean daily loads) studies of streams, stream reaches, and other water bodies with impaired water quality parameters. Some of these practices have also already been implemented.

●Past and present actions that have and/or continue to impact the affected environment include:

■Crystal Peak's commercial fertilizer operations at Sevier Lake in the late 1980's;

- Salada’s commercial fertilizer operations at Sevier Lake in the late 1990’s;
- Water diversions, mostly from the Sevier River, have reduced inflows to Sevier Lake –
 - Diversions for agricultural irrigation as already discussed above
 - Diversions for commercial uses (other than irrigation)
 - Diversions for potable water and domestic uses
 - Diversions for other uses

● Water diversions from the Sevier River and wells for livestock and wildlife do not appear to be a major direct, indirect, or cumulative influence on water inflows to surface water at Sevier Lake or groundwater beneath the lake.

Direct and Indirect Environmental Impacts of the Proposed Action:

Proposed Action:

- The action of leasing solid mineral lease parcels does not in itself have any direct or indirect hydrologic environmental impacts on the project area, or affect the floodplain of Sevier Lake.
- Actions related to the development of lease parcels could directly or indirectly affect surface water levels during flooding events, affect groundwater levels, affect subsurface water levels around Sevier Lake, and put new or reconstructed ditches, evaporation ponds, and other structures at risk during major floods. There is also a potential for hydrologic impacts or impacts to the floodplain from actions on land around the lake, such as a processing plant, access roads, and the structures needed to bring a power source. The potential for these impacts within Sevier Lake and the surrounding acreage is dependent on what is planned for development after the sale of the lease parcels and is better analyzed in a separate environmental document once the lessees submit an application to develop and operate.

No Action:

- The decision to not lease solid mineral lease parcels does not in itself have any direct or indirect hydrologic environmental impacts on the project area, or affect the floodplain of Sevier Lake.
- If lease parcels were sold and analyzed for development, the potential impacts from a decision to not approve proposed development are better analyzed in a separate environmental document once the lessees submit an application to develop and operate. It is generally anticipated that with a decision of no action the affected environment would remain at about its current conditions.

Mitigation Measures:

Proposed Action:

- Notices could be attached to either individual parcels or as a condition of offering for either groups of parcels or all of the parcels to be offered. Notices serve to advise the perspective bidders of potential stipulations or mitigation measures that may be a condition of approval of an

application to develop the lease parcels. I recommend a notice be included in the lease offering for all of the parcels that water use for the fertilizer operations should not reduce any of BLM's existing water rights and water uses below the amount approved by the State Engineer. Groundwater levels at all wells in the vicinity of Sevier Lake – including wells used for the fertilizer operations and wells used by livestock and wildlife – should be monitored frequently enough that such an impact is avoided. This notice should not generate a new action alternative.

No Action:

- A decision to not offer the solid minerals lease parcels at Sevier Lake would not require mitigation measures, notices, or stipulations. Given this scenario, the BLM should continue to monitor conditions at Sevier Lake, and may reconsider offering some or all of these parcels in the future.

Reasonably Foreseeable Future Actions:

An interagency environmental document is in the process of being prepared for the Magnum Gas Storage Project. During the construction phase, large quantities of water would be used to create four storage caverns. The proposed action includes a change of application from current pumping of groundwater from shallow wells to the pumping of groundwater more than 1,000 feet below the earth's surface. If the project is implemented as planned, there is the potential for a small increase of stream flows in the Sevier River if water rights are diverted from shallow wells to deeper wells for the formation of storage caverns. This phase of the project is anticipated to last about eight years.

Cumulative Impacts:

There may be incremental decreases in the inflow of total dissolved solids to Sevier Lake as better land management practices in the Sevier River Basin reduce concentrations of total dissolved solids in the Sevier River. This may affect the concentrations of potassium, magnesium, sodium, and chlorides in Sevier Lake.

Existing water uses and water rights have a cumulative, as well as indirect, effect on water inflow into Sevier Lake. It may be difficult to determine if trends would be towards higher or lower stream flows. More efficient uses of diverted waters for agriculture and other uses could potentially be more than offset by increasing demands for water diverted from the Sevier River.

The proposed action can eventually have a cumulative impact on surface water levels, floodplain levels, and groundwater levels if the parcels are leased and developed for the commercial production of fertilizer and/or other products. These effects would have to be analyzed at the time that the lessees submit an application.

As discussed above under the heading of Reasonably Foreseeable Future Actions, the proposed action as described for the Magnum Gas Storage Project could result in an incremental increase in stream flows at the Sevier River for a period of about eight years (or less). At this time, it is difficult to determine if the difference would be or would not be at a cumulative threshold.

References Cited:

- *Finding of No Significant Impact and Decision Record (June 1997)*

- *Salada Minerals Mining Plan for Sodium Leases on Sevier Lake (June 1997)*
- *Utah's 2002 303(d) List of Impaired Waters*
- *TMDL Water Quality Study of the Middle and Lower Sevier Watershed (2004)*
- *Utah 2008 Integrated Report 303(d) List of Impaired Waters*
- *Executive Order 11988 on Floodplain Management (1977)*
- Working Files on the Magnum Gas Storage Project (2009 to 2010)
- USGS historical monthly stream flow records for the Sevier River near Delta, Utah – station number 10228000 (1912 to 1917)

Sevier Lake Potash Lease Sale
Cultural Resources Class I Inventory

SPECIALIST REPORT

Joelle McCarthy

Bureau of Land Management

Fillmore Field Office Archaeologist

23 April 2010

INTRODUCTION

The proposed lease parcel discussed in this report would be offered for lease subject to applicable laws and lease conditions. The proposed parcels described herein may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders.

The Fillmore Field Office (FFO) Class I Inventory Report for the Sevier Lake Potash Lease Sale adequately summarizes the presence and absence of archaeological inventories and cultural properties located within the proposed project. The Bureau of Land Management (BLM) will not approve any ground disturbing activities that may affect cultural properties eligible to the National Register of Historic Places (NRHP) until it completes its obligations under applicable requirements of the NHPA and other authorities. On all parcels, once a project specific proposal is submitted, an additional Section 106 cultural resource assessment would be completed and site specific issues would be addressed as appropriate. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that

is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

CLASS I INVENTORY RESULTS

All cultural resource information was reviewed and pertinent cultural resource information was analyzed for the **Area of Potential Effect (APE), which is defined as the entire 126,000 acres being offered for the Sevier Lake Potash lease sale.** A portion of the proposed parcel has been inventoried. Uninventoried portions were compared with similar areas where inventories had been conducted. This analysis included an assessment of soils, elevation, topography, vegetation and water resources.

Based on the results of previous cultural resource inventories, the potential for locating additional cultural resources within the proposed lease parcels reviewed for the Sevier Lake Potash lease sale is low for areas within the lake boundary and high for areas along the lake margins. Furthermore, analysis of the reasonably foreseeable impacts of leasing on both identified and unidentified cultural properties and the use of additional stipulations resulted in the recommendation of **No Adverse Effect.** A brief summary and analysis of inventories within the proposed parcels follows, which illustrates how this determination was made.

Alternative A – 126,170 acres

Alternative A includes leasing the entire lake bed and adjacent areas. Historic properties in this area represent all cultural periods from Paleoindian to Protohistoric and Historic sites. The class I report identified fifteen sites within the proposed lease parcels, of which 9 are unevaluated, 4 are eligible and 2 are not eligible for the National Register of Historic Places. The majority of the sites are located near the mouth of the Sevier River and includes an archaic period burial site. By applying the stipulations, it has been determined that reasonable development could occur on this proposed parcel without impact to eligible cultural properties.

Alternative C – 96,000

Alternative C reduced the amount of acres offered for lease by removing some of the parcels located along the lake margins. This alternative would reduce the likelihood of impacting historic properties in those areas; however, does not remove that possibility. By applying the stipulations, it has been determined that reasonable development could occur on this proposed parcel without impact to eligible cultural properties.

SUMMARY

After consideration of cultural resource information and other general data including: the applicable Warm Springs RMP and associated Environmental Impact Statement (EIS); specific data relating to the individual proposed parcels such as topography and soils; as well as personal knowledge and experience of the lands at issue, it has been determined that reasonable development could occur without adverse impacts to cultural properties eligible to the NRHP.

The Utah Protocol Part VII.A.B. was applied to the cultural resource review for the Sevier Lake Potash Lease Sale. The FFO has determined that the proposed undertaking will have **No Adverse Effect** on historic properties.

Known cultural resources are located in such a fashion (size, density and placement) that avoidance is feasible during development of mineral resources. The potential for locating additional cultural resources within the proposed lease parcels reviewed for the Sevier Lake Potash Lease Sale is low to high. A complete inventory of the proposed lease parcels has not occurred; therefore, the following stipulation should be added to each lease parcel:

“The Lessee shall contact the Authorized Officer with sufficient information and request a determination if a cultural inventory and/or tribal consultation is necessary. If it is necessary, the lessee shall conduct a cultural resource inventory to BLM Utah Class III inventory standards on all lands that may disturb the surface within the boundaries of the leased lands. The inventory shall be

conducted by a qualified professional cultural resource specialist (i.e. Archaeologist, historian, or historical architect, as appropriate), approved by the Authorizing Officer (AO). A report shall be generated of the inventory and recommendation for protecting any cultural resources that are identified. The lessee shall undertake measures, in accordance with instructions from the AO to protect cultural resources on the leased land. The lessee shall not commence the surface disturbing activities until permission to proceed is given by the AO. The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the Lessee. The lessee shall protect all cultural resource properties within the lease area from lease related activities until the cultural resource mitigation measures can be implemented.”

CONSULTATION

The following tribes will be notified via certified letter: Paiute Tribe of Utah (PITU), Confederated Tribes of the Goshute Reservation, Kanosh Band of the Paiute Tribe, Skull Valley Goshute Tribe and the Ute Tribe. A copy of this report and maps will be provided to each of the tribes. They will be asked to identify traditional cultural places or any other areas of traditional cultural importance that need to be considered within the APE. Any comments or concerns regarding leasing the proposed parcels must be submitted to the FFO within thirty days of receipt of the letter.

According to Part VII.A.B (4) of the Utah Protocol, the BLM can request the review of the Utah State Historic Preservation Office (SHPO) prior to project implementation. This review includes requesting SHPO concurrence on the determination of effect. The Utah SHPO will be consulted regarding this proposed project.

Sevier Lake Production Report

*Information compiled by Stan Perkes, Mining Engineer, Division of Lands & Minerals, BLM
Utah State Office, August 2010*

Sevier Lake Potash Production Rates:

The Sevier Lake potash production rates were based on current Utah potash operations. Economic markets, ore chemistries and production processes will limit any production scenarios. Potash production requires a “ramp up” period for two to three years to lay down sodium chloride salt floors in the ponds. The mine operation will continue after the potash production has ceased for several years and as reclamation is completed.

Potash Markets:

The potash market is quite different than sodium chloride (salt). The United States is the largest consumer of potash in the world at about 6.2 million tons per year. At present the United States imports about 80% of the potash consumed and was ranked 6th in production in 2006 and 2007 at about 1.2 million tons per year (USGS, 2008, p. 128-129). The world wide potash demand is expected to increase 1.3 million tons per year through 2011 (Ringbolt, 2010). “However, with the potash industry struggling to meet new demands, and with no new major projects yet announced, it seems that the gap between the demand for potash and the available supply may continue to widen” (Ringbolt, 2010). The potash market volume does not appear to be a limiting factor for the Sevier Lake potash. About 95% of mined potash is used in making fertilizer.

Potash Production Capacities:

The following production numbers come from companies well established in the market place. The Utah potash production rates range from 60,000 - 90,000 tons per year (tpy) (Intrepid, 2010) up to 322,000 - 420,000 tpy (Compass Minerals, Intl , 2010). This equates to some 5 billion gallons of brine for Intrepid Potash (Alternative C) to 39 billion gallons of brine for Compass Minerals, Intl (under Alternative A in the NEPA document).

Sevier Lake Potash Reserves and Projected Mine Life:

The Sevier Lake potash reserves were estimated by Hazen Research at 5.2 million tons and at a projected 50% recovery that would equate to 2.6 million tons recoverable. Production would continue for some 26 years at a 100,000 tpy production rate and some 6.5 years at 400,000 tpy (Howe & Berthold, 1986). In addition, the mine would be in operation for an additional 2-3 years for the initial sodium chloride salt floor lay down and final reclamation would proceed for probably a few years after final potash production.

Sevier Lake Sodium Chloride (Salt) Production Rates:

Sodium Chloride (Salt) Markets:

The annual world production of salt is about 250,000,000 tons (EU China, 2009). The United States and China make up 40 percent of the world's salt production. The United States now ranks second in salt (sodium chloride) production at over 40 million tons per year (Salt Institute, 2010). The United States Reserves of Salt are estimated to be able to supply the world's present salt needs for over 100,000 years (Salt Institute₂, 2010). In 1990, the US imported approximately 13% of its salt and exported about half of that amount (USGS 1997). About 10% of the world wide salt production is used for highway de-icing. The worldwide market is projected to increase by 2.5% each year.

Sevier Lake Sodium Chloride Secondary Markets (Sodium Chloride – Salt):

At Sevier Lake there may also be an opportunity for secondary markets to be developed for sodium chloride. These would most likely be relatively local markets. Currently, the sodium chloride market is dominated in Utah by Great Salt Lake Minerals, Morton Salt, Cargill, and US Magnesium which all produce from the Great Salt Lake and all have direct access to rail transportation. The Utah Geological Society in their 2009 Summary of Mineral Activity in Utah report estimated that the salt production in Utah at about 3,000,000 tpy and that is dominated by three of the producers: Great Salt Lake Minerals, Cargill, and Morton Salt. Other producers include Intrepid Wendover and Intrepid Moab along with Redmond Salt (Bon, Kraulec, 2010, p. 6). Also, Intrepid Wendover and Intrepid Moab also produce sodium chloride as a secondary product from other sources than the Great Salt Lake, but they are also supported directly by rail transportation. The Sevier Lake property could be competitive in the market with rail access a short distance away, about 10 miles, to the east.

Sevier Lake Sodium Chloride (Salt) Projected Productive Capacity - Salt Production Life:

At this time it is very difficult to accurately estimate the amount of secondary product sales that may come from this operation. From the 1966 Sevier Lake samples taken by the Utah Geological and Mineralogical Survey (Gwynn, 2006, p 24) and averaging the samples, the sodium to potassium ratio is about 29.2 to 1. This means that there is 29.2 times the amount of sodium ions available in the brine than potassium ions. Not all of the sodium ions would be available for the production and/or sales of sodium chloride but there could be substantial amounts available. Intrepid Wendover and Intrepid Moab potash operation brines have high sodium to potassium ratios (Intrepid Wendover 15.6 to 1[Turk, 1973, p.13]) because they are in a sodium rich environment, but after a review of their salt sales (Intrepid, 2010, p. 42) the production/sales of salt is low based on their ratios. Checking the Great Salt Lake sodium to potassium ratio based on data taken by the UGS for January 2006 the ratio is 13.7 to 1. (Gwynn, 2007)

Because of the market price and volume sensitivity, it is almost impossible to predict how much sodium chloride salt could be sold and shipped from Sevier Lake location. However, Crystal Peak Minerals stated in their 1989 mining plan for Sevier Lake that their “current sales projections estimate shipping up to 100,000 ton per year” (CPMC, 1989, p. 4). The sodium chloride salt production would continue for the life of the potash production and could perhaps start somewhat earlier and extend somewhat longer.

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USGS, 1997, *Salt Statistical Compendium*, Salt Supply, Table 8, <http://minerals.usgs.gov/minerals/pubs/commodity/salt/stat/tbl8.txt>, Retrieved August 18, 2010.

APPENDIX C

Summary of Background NEPA Documents

Crystal Peak & Salada NEPA Documents for Sevier Lake Minerals, Utah

EA J-050-098-031 TR for Salada Minerals, LLC Sevier Lake Project - Evaporation Ponds, Site ROW UTU-72918

Approved February 1998.

Proposed Action summary: Issue ROWs for approximately 4,000 acres in T24S R12W Sections 3,4,5,6,7,8,9,10,15,17,18 for ponds, transfer ditch, dike and road; and approximately .57 acres in T24S R12w Sections 15 and 22 for pipeline and powerline site. 'EA' tiers off -034 EA below, and decision incorporates terms and conditions of -034 EA. Includes IDT checklist and TES clearance from Jan. 1997.

EA J-050-097-034 for Salada Minerals Mining Plan for Sodium Leases on Sevier Lake, UTU-075820 through UTU-075827

Approved June 1997 with stipulation that Plan is approved by BLM State office.

Proposed Action summary: Salada would produce up to 400,000 tons of sodium chloride and 40,000 tons of magnesium chloride brine per year using some of the existing ditches and ponds, and extending them into areas outside the sodium lease block by adding ROWs. Plant site would be in T24S R12W Section 16 (State of Utah). *This was authorized with stipulations for dust control, reclamation, wildlife/livestock water, and etc.*

EA-050-87-080 for W.D. Haden Development Plan for Sevier Lake

Approved August 1987.

Proposed Action summary: Develop potassium sulfate processing plant with all needed facilities- 8 concentration ponds (11 square miles), 12 harvest ponds (6 square miles), one mag. chloride pond (<1 square mile); borrow areas in T24S R12W Sec. 16 and T22S R11W Sec.32; processing plant, stockpiles, etc. in South 1/2 Sec. 16, T24S R12W (State section); rail loadout on 114 acres purchased by Haden next to Highway 257; 10-well (12" wells cased 200 feet deep) water well field in T24S R14W Sec.21,22,23; 2.5-mile , 15" diameter

pipeline to plant; 46 kV powerline from plant to Milford; access road to plant from Black Rock road – would be county ROW, built w/materials from BLM borrow pit under county permit; dike access roads. Phase 1-dike & pond construction, then 2-year salt build-up; then Phase 2 – build plant. Mitigation provided for dust, borrow pit reclamation, livestock & wildlife water, eagles (construct safe perches along power line).

Crystal Peak was issued preference right leases for potassium on entire lakebed. Plan progressed until death of Crystal Peak's principal investor. Reclamation followed w/breaching of dikes.

EA-050-87-036 EA for Haden POO for Mineral Exploration at Sevier Lake

Approved April 1987.

Proposed Action summary: In order to fulfill annual work requirements under mining laws - construct a containment dike on the lakebed 15 feet wide, 11,250 feet long by 3.4 feet high in T24S R12W., Sections 4,9,10,15. Also includes approaches to dike at lake edge, and a worksite/camping area. Borrow from pit in Section 15 near south end of lake. Also 2 water wells, one to test water at edge of borrow pit; one as brine well drilled from a pad on the constructed dike. T&E clearance conducted.

Dike completed in July 1987.

EA-050-86-87 for Sevier Dry Lake Potassium Mining Plan (Godbe)

Approved July 1986.

Proposed Action summary: Construct earthen dike across needlepoint -4 to 6 miles long, 8 to 15 feet tall, to continue processing of lake brines based on initial exploration work under potassium prospecting permit.

Needlepoint Dike not constructed.

Notes: 1) W.D. Haden Company, also known as Crystal Peak Minerals.

2) M.C. Godbe was a consultant to W.D. Haden

APPENDIX D

Migratory Birds List & TES Species Summary

Bird Conservation Region (BCR) 9 (Great Basin) BCC 2008 list.⁹ (list and map from USFWS 2008)

Greater Sage-Grouse (Columbia Basin DPS) (a)

Eared Grebe (nb)

Bald Eagle (b)

Ferruginous Hawk

Gold Eagle

Peregrine Falcon (b)

Yellow Rail

Snowy Plover (c)

Long-billed Curlew

Marbled Godwit (nb)

Yellow-billed Cuckoo (w. U.S. DPS) (a)

Flammulated Owl

Black Swift

Calliope Hummingbird

Lewis's Woodpecker

Williamson's Sapsucker

White-headed Woodpecker

Willow Flycatcher (c)

Loggerhead Shrike

Pinyon Jay

Sage Thrasher

Virginia's Warbler

Green-tailed Towhee

Brewer's Sparrow

Black-chinned Sparrow

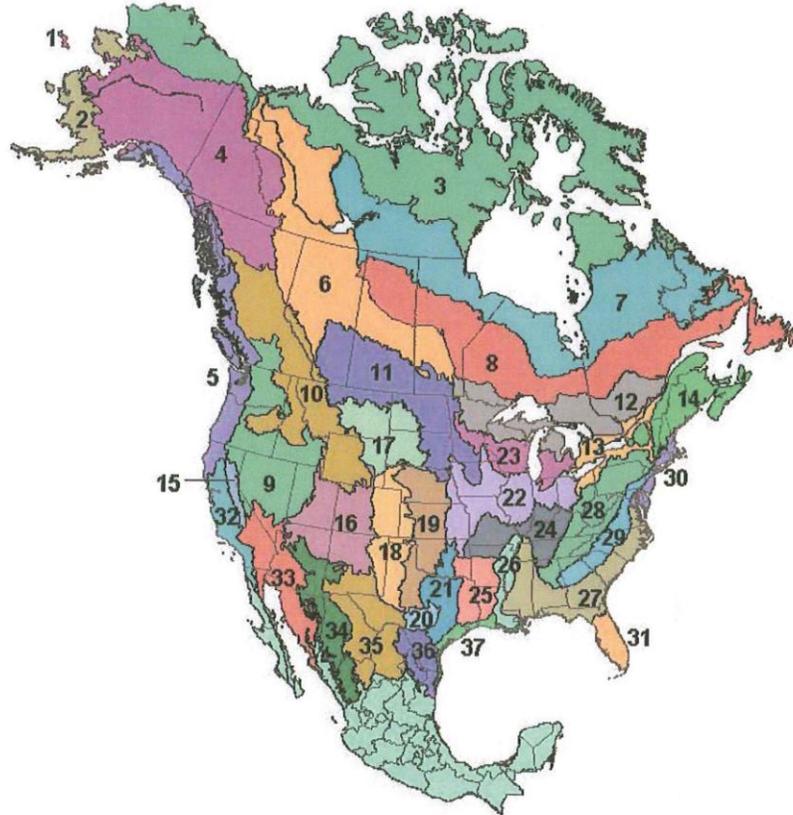
Sage Sparrow

Tricolored Blackbird

Black Rosy-Finch

⁹ (a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of Threatened or Endangered species, (d) MBTA protection uncertain or lacking, (nb) non-breeding in this BCR

Figure 1 Map of the Bird Conservation Regions (BCRs) of the United States 3



3 The figure does not show BCR 67 (Hawaii) or two other Bird Conservation Regions from the report that included islands in the Pacific and Caribbean which are either U.S. Territories or other affiliates.

Threatened, Endangered, & Sensitive Plants and Animals in the Sevier Lake Potash Leasing Area

PLANTS

Federally Listed:

BLM-administered land within the Fillmore Field Office contains no plant species that are federally listed as Threatened, Endangered, Candidate, or Proposed as such. Therefore, there is no effect on any plant populations protected under the Endangered Species Act (ESA).

BLM Sensitive:

There are several plants designated as BLM sensitive species in the Fillmore Field Office area. However, none of these plant species are known to occur on or adjacent to the Sevier Dry Lake bed. As such, no impacts to those species are anticipated.

ANIMALS

Federally Listed:

BLM land within the Fillmore Field Office contains the following animal species that are protected under the ESA:

Utah prairie dog (*Cynomys parvidens*) - Threatened

The Utah prairie dog currently is found in the southern Bonneville Basin and high elevation plateaus of central Utah. Key habitat components are: elevation below 9,000 feet; availability of water in addition to precipitation; mixed grass plant community with less than 10 percent of vegetation over 12 inches tall; non-alkaline soils; cool season palatable forage available; and, moist vegetation available throughout the summer (Bosworth 2003).

Most existing colonies are located in Iron, Garfield, Piute, and Wayne Counties, with populations scattered in six other nearby counties (Bosworth 2003). Colonies are either dense where located in or near alfalfa fields (e.g., Iron County), or sparsely populated on high plateaus (Bosworth 2003). A Habitat Conservation Plan has been developed for Iron County (Iron County Commission and Utah Division of Wildlife Resources 1998). Multiple records in Iron County come mostly from the eastern half of the county. There

are no records of Utah prairie dog observations in the Sevier Lake leasing area, and there is no suitable habitat for this species in the area.

Yellow-billed cuckoo (*Coccyzus americanus*) – Candidate

Western yellow-billed cuckoos utilize large riparian tracts dominated by mature cottonwoods with a dense understory of willows. In Utah, western yellow-billed cuckoos were formerly uncommon summer residents along river bottoms in many parts of the state. They are now rare breeders in lowland riparian habitats across Utah. Only three confirmed nests were found in Utah between 1992 and 2002, though there is probable but still unsurveyed habitat in the state (Parrish 2002). There is no suitable habitat in the Sevier Lake leasing area for this species.

Greater Sage-Grouse (*Centrocercus urophasianus*) – Candidate

The greater sage-grouse is a large, rounded-winged, ground-dwelling bird, up to 30 inches long and two feet tall, weighing from two to seven pounds. It has a long, pointed tail with legs feathered to the base of the toes. Females are a mottled brown, black, and white. Males are larger and have a large white ruff around their neck and bright yellow air sacks on their breasts, which they inflate during their mating display. The birds are found at elevations ranging from 4,000 to over 9,000 feet and are highly dependent on sagebrush for cover and food.

Currently, greater sage-grouse are found in Washington, Oregon, Idaho, Montana, North Dakota, eastern California, Nevada, Utah, western Colorado, South Dakota and Wyoming and the Canadian provinces of Alberta and Saskatchewan and occupy approximately 56 percent of their historical range. Well-known for males' elaborate courtship displays, Greater Sage-Grouse are strongly tied to the sagebrush habitats of western North America. The degradation and outright destruction of sagebrush areas has already greatly reduced the historic range of this big grouse, and continued habitat disturbance could result in this species' listing as a federally threatened or endangered species (Audubon Watch List 2010).

On March 5, 2010, the U.S. Fish and Wildlife Service announced that listing of the greater sage-grouse as an endangered species under the Endangered Species Act (ESA) is warranted, but listing is precluded by the need to complete other listing actions of higher priority (BLM 2010).

As a result, the greater sage-grouse will be placed on the list of species that are candidates for Endangered Species Act Protection. The Service will review the status of the species annually, as it does with all candidate species, and will propose the species for protection when funding and workload priorities for other listing actions allow.

Evidence suggests that habitat fragmentation and destruction across much of the species' range has contributed to significant population declines over the past century. If current trends persist, many local populations may disappear in the next several decades, with the remaining fragmented population vulnerable to extinction.

However, the sage-grouse population as a whole remains large enough and is distributed across such a large portion of the western United States that the needs of other species facing more immediate and severe threat of extinction must take priority.

There is no **sage grouse** brooding or winter habitat in the Sevier Lake leasing area (UDWR 2009). There is no suitable habitat for this species in the Sevier Lake leasing area.

There is no anticipated effect on the above Federally listed or Candidate species.

BLM Sensitive:

There are several animals designated as BLM sensitive species in the Fillmore Field Office area. Those that may occur in the vicinity of the Sevier Lake leasing area are listed below. Four of these were listed on the Utah Natural Heritage database results, as noted below.

Eagles – **Bald eagles** and **golden eagles** may occur in the vicinity. Bald eagles use the general area for wintering, and golden eagles may use the general area yearlong. Due to the vast dry lake area involved across which any sounds from project development activity would be dispersed, the lack of prey base on the Sevier Lake leasing area, and the distance from the lake to the closest mountains (about 4 miles from either lake edge) that may provide habitat, eagles are not likely to be affected by leasing and mineral extraction activity on Sevier Lake.

Ferruginous hawks occupy grasslands, sagebrush, salt-desert, and other shrublands, and edges of pinyon-juniper woodlands; they may become locally abundant at shrub-steppe and pinyon-juniper ecotones. They may forage in the Sevier Lake leasing area. According to the Utah Natural Heritage database, this species was observed in 1997 in several of the Quad areas that cover Sevier Lake. As with other raptors that may occur in the area, potential effects to ferruginous hawks should be reviewed in conjunction with a proposed plan for development.

Northern goshawks occur in Utah principally in montane conifer-aspen forest (to tree-line), where thick stands of conifer and aspen groves near permanent water are favored nesting sites; occasionally they are found in narrow-leaf cottonwoods along streams in lower valleys. Although the species was observed in the Sevier Lake SW Quad area in

1983, according to the Utah Natural Heritage database, there is no suitable habitat for this species in the Sevier Lake leasing area.

Northern harriers may utilize the general area for hunting small mammals or birds. Northern harriers typically inhabit open areas including grassland, wetland, agricultural land and steppe habitats. As with other raptors that may occur in the area, potential effects to Northern harriers should be reviewed in conjunction with a proposed plan for development.

Burrowing owls may utilize the general area for foraging and nesting. Its habitats are open grassland and prairies, but it also utilizes other open situations, such as golf courses, cemeteries, and airports. It eats mainly terrestrial invertebrates, but also consumes a variety of small vertebrates, including small mammals, birds, frogs, toads, lizards, and snakes. Burrowing owls are obligate burrow nesters, and utilize burrows dug by prairie dogs, badgers, and ground squirrels, but they are largely dependent on prairie dog burrows in Utah. According to the Utah Natural Heritage database, this species was observed in the Long Ridge SW Quad area in 1990. Potential effects to burrowing owls should be reviewed in conjunction with a proposed plan for development.

The **Kit fox** is highly adapted to arid and semi-arid areas. Habitats include desert, grassland/herbaceous, playa/salt flat, savanna, shrubland; primarily in open desert, shrubby, or shrub-grass habitat. In the Great Basin, the kit fox is found in shadscale, greasewood, and sagebrush. According to the Utah Natural Heritage database, kit fox were observed in the Long Ridge SW Quad area in 1988, and in the Headlight Mtn. Quad area in 1995. Since kit fox habitat occurs in the Sevier Lake leasing area, potential effects to kit fox should be reviewed in conjunction with a proposed plan for development.

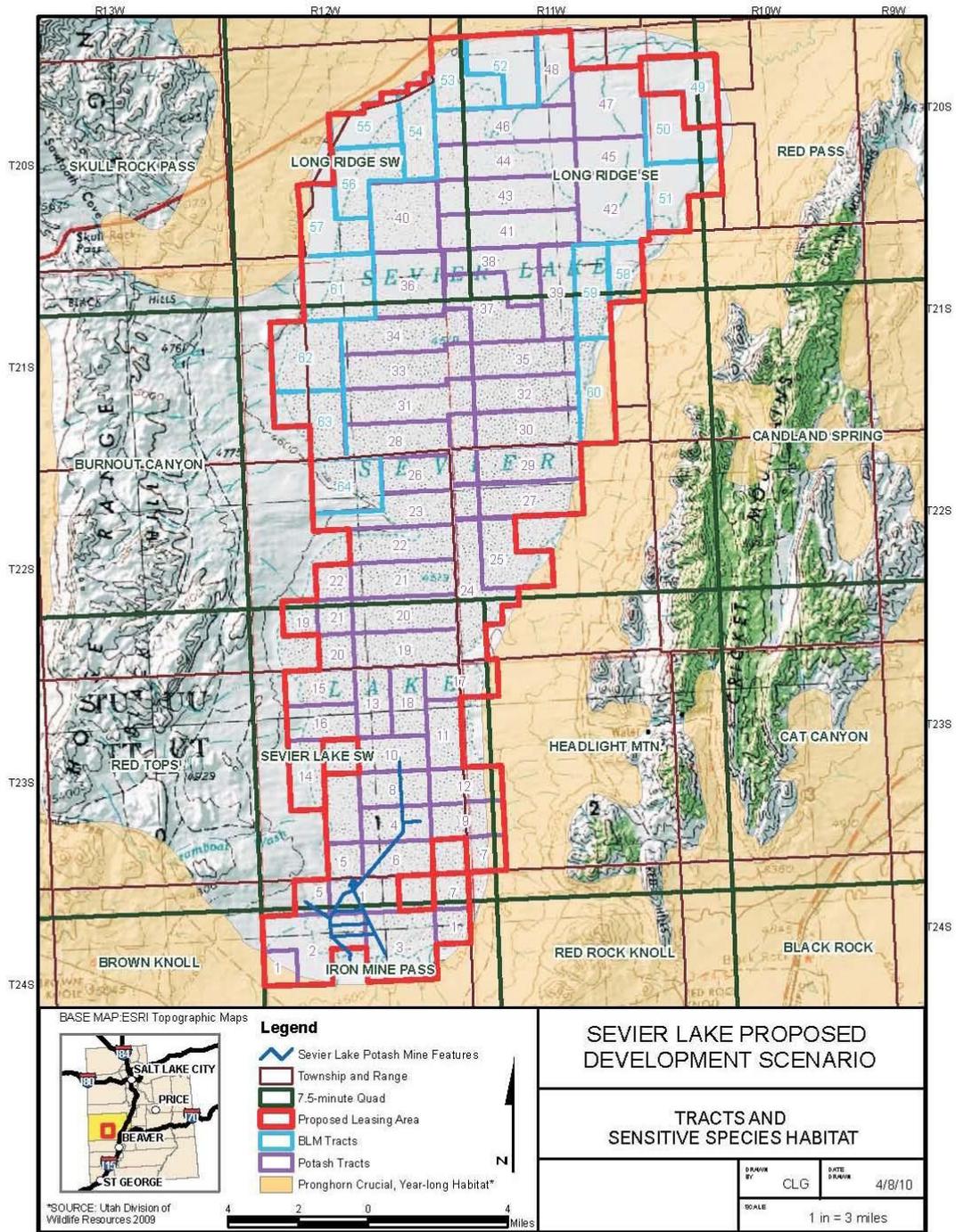
General Wildlife:

Pronghorn are known to occur in the Sevier Lake leasing area. The species is common in Utah, where it primarily occurs in desert, grassland, and sagebrush habitats. The visibility of pronghorn in open terrain, especially in the vicinity of roads and highways, makes them popular subjects for non-consumptive wildlife recreational interests in many areas of Utah (UDWR 2009). Pronghorn are often found in small groups and are usually most active during the day. Utah Division of Wildlife Resources designated pronghorn crucial, year-long habitat occurs on the north, east, and south sides of Sevier Lake. Since pronghorn occur in the Sevier Lake leasing area, potential effects to pronghorn should be reviewed in conjunction with a proposed plan for development.

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- Utah Division of Wildlife Resource, 2009. Utah Pronghorn Statewide Management Plan.



APPENDIX E

Public Comments on Draft EA/BLM Responses

Com- ment #	Commentor	COMMENT/RESPONSE	INTEGRATION STATUS (EA ADDITION/ CORRECTION)
1	SUWA	<p>The EA fails to satisfy the requirements of NEPA, FLPMA, NHPA, and implementing regulations; an EIS needs to be written.</p> <p><u>Response:</u> See responses below for Comments #5, #6, #8, #9, # The BLM is required to review all potential impacts of the proposed action. If the BLM determines that there are No significant impacts and a Finding of No Significant Impact (FONSI) can be signed. Impacts may be mitigated through stipulations.</p>	No EA change required.
2	SUWA	<p>It is not clear on the face of the EA that it is a third party document, prepared on behalf of Emerald Peak Minerals.</p> <p><u>Response:</u> The EA was prepared according to the template provided in the BLM Utah NEPA Guidebook (BLM 2009). EA preparers are listed in Chapter 5 of the EA, Consultation and Coordination, but this list of preparers is not required for an EA. It is not typical for a BLM EA to include the third party consultant on the cover of the EA, or in the description of the EA process. The EA was prepared on behalf of parties that expressed interest in leasing, per the rules at 43CFR 3500, under a cost recovery agreement. Under cost recovery, the notice of lease sale must include the fee paid to the BLM per the following; <i>If the tract being offered for competitive sale was nominated by an applicant, a statement of the total cost recovery fee paid to BLM by the applicant under §3508.12 up to 30 days before the competitive lease sale. 3508.14(b)(7).</i></p>	No EA change required.
3	SUWA	<p>No MOU was prepared by the BLM for the EA process.</p> <p><u>Response:</u> No MOU was prepared. The noted IM WO-2006-011 requiring completion of an MOU when a third party is used to prepare a major EA expired on 9/30/2007. The BLM is confident that the third party contractor, JBR has maintained and continues to maintain an appropriate relationship and level of communication with Emerald Peak. This relationship was also discussed with Emerald Peak.</p>	No EA change required.
4	SUWA	<p>SUWA believes that Emerald Peak may have been in contact with JBR and BLM regarding the progress and content of the document prior to its release to the public.</p> <p><u>Response:</u> See response to Comment #3, above. In addition, it is not unusual for a proponent to communicate with the BLM regarding the progress of their proposal or application. The BLM is confident that</p>	No EA change required.

Com-ment #	Commentor	COMMENT/RESPONSE	INTEGRATION STATUS (EA ADDITION/ CORRECTION)
		the analysis in the EA was not influenced by Emerald Peak prior to its release to the public.	
5	SUWA	<p>BLM must prepare an EIS to fully evaluate and consider the potentially significant impacts from this proposed development.</p> <p><u>Response:</u> The BLM ID Team did not identify any significant environmental effects from the proposed leasing action. Leasing stipulations are included in the proposed action to address scoping concerns, to require the gathering of resource data prior to lease development, and to prevent undue and unnecessary resource degradation. The decision record on this competitive potash leasing EA will not authorize development. It will allow a competitive potassium lease sale to move forward through the publication of a lease sale notice. The acquisition of a potassium lease provides an exclusive right to the mineral; the extraction and development of that resource is only allowed according to lease stipulations and under an approved mine plan, as well as other required state and federal approvals. An approved mine plan is a detailed plan as described in 43 CFR 3592.1 that, once complete, is subject to NEPA compliance.</p>	Added text to EA in Section 1.5.
6	SUWA	<p>An EIS is necessary to address the degree to which the proposed action affects public health or safety as a result of Direct, Significant & Adverse Effects on Local & Regional Air Quality from wind-blown dust</p> <p><u>Response:</u> The proposed action is unlikely to have any direct, significant, or adverse effects on local or regional air quality, and thus would not be expected to impact public health or safety. It is more likely to actually reduce the likelihood of windblown dust events over the life of the project due to the covering of a portion of the dry lake bed surface with liquid, which would suppress potential dust production on areas that would otherwise be left open. See EA Section 4.2.1.1. Water is the most widely recommended and used fugitive dust suppressant for construction, mining, and industrial applications (see Utah Department of Environmental Quality (UDEQ) R307-309; EPA 1992). The minor amount of dust emissions created by construction and operation activity will be addressed through implementation of a dust control plan that would be required for approval of a lessee's mining plan. At the conclusion of mining areas of the site will retain a layer of salts, which have been shown to form</p>	No EA change required.

Com-ment #	Commentor	COMMENT/RESPONSE	INTEGRATION STATUS (EA ADDITION/ CORRECTION)
		<p>crusts that are effective in suppressing fugitive dust (see CARB 2007). Painter et al. (2010 – SUWA Attachment 13) states <i>Cessation of disturbance generally results in stabilization of soil surfaces within days to years, depending on the type of stabilizers available. Physical soil crusts can reform with intense rains, and thus can stabilize surfaces quickly. Cyanobacterial crusts can reform within a few years after disturbance.</i></p> <p>Thus, under the consideration for evaluating intensity or severity of effects to public health or safety, the effects to air quality would not be considered significant adverse effects (40 CFR 1508.27 (b)(2)) and therefore would not trigger an EIS.</p>	
7	SUWA	<p>Millard County’s protest of Emerald Peak Mineral’s application for a water right states: “Emerald Peak Minerals’ proposal to withdraw groundwater will lower the water table to such an extent that it will substantially reduce groundwater dependent vegetation, which will destabilize soils and contribute to blowing dust from the Sevier Lake area resulting in reduced air quality in both the immediate Millard County area and northward into Juab, Tooele, Utah, Salt Lake, and other counties.”</p> <p><u>Response:</u> The BLM is not evaluating “Emerald Peak Minerals” water right application, or comments on the application, in this EA. The action that is before the BLM is a competitive leasing action for potassium under 43 CFR 3508.21. The competitive leasing action is open to anyone who would like to bid on the tracts. Anyone can obtain the tracts during the lease sale if they meet the BLM qualifications to hold a Federal Lease, post a sufficient bond, meet or exceed the Fair Market Value of the tracts and pay the first year’s rental payments.</p> <p>As noted in Section 1.7 of the EA, “The lease stipulations call for analysis of water resources and monitoring for effects to water right holders. Stipulations also call for replacement of water resources to maintain existing uses such as livestock, agricultural, and wildlife.” See Stipulation No.13.</p>	No EA change required.

Com-ment #	Commentor	COMMENT/RESPONSE	INTEGRATION STATUS (EA ADDITION/ CORRECTION)
8	SUWA	<p>An EIS is necessary due to Unique Characteristics – Sevier Lake is a critically important terminal lake and should be considered as an integral part of the Great Salt Lake System.</p> <p><u>Response:</u> The BLM’s Warm Springs Resource Area RMP/FEIS does not ascribe any unique classification or critical importance to Sevier Lake, nor does it consider the lake to be an Area of Critical Environmental Concern. Utah’s Board of Water Resources’1999 Sevier River Basin State Water Plan does not describe Sevier Lake as anything close to unique or ecologically critical. In fact, the chapter in that plan devoted to fisheries and water-related wildlife does not even mention the lake. Due to the high percentage of stream flows that no longer reach the lake because they have been diverted for other beneficial uses, Sevier Lake lost its natural hydrologic functioning long ago.</p> <p>Further, while geologically speaking, Sevier Lake and the Great Salt Lake were part of the same “system” when they were both within ancient Lake Bonneville, today they are separate basins by all reasonable measures (hydrologically and for planning purposes, according to the Utah State Water Plan done in 2001; administratively according to Utah State Engineers Office in regard to Water Rights). Only at the regional (2-digit) HUC scale of the Great Basin itself are these two areas categorized as being part of the same “system”.</p> <p>Thus, under the consideration for evaluating intensity or severity of effects, the effects to unique characteristics (40 CFR 1508.27(b)(3)) would not be considered significant adverse effects and therefore would not trigger an EIS.</p>	No EA change required.
9	SUWA	<p>An EIS is necessary because the issuance of potash leases is the point of irretrievable commitment of agency resources and may establish a precedent for future actions with significant effects.</p> <p><u>Response:</u> An EIS (not an EA) must include descriptions of any irreversible or irretrievable commitments of resources which would be involved in a proposal should it be implemented (BLM Manual H-1790-1). The determination of whether or not an action must be analyzed in an EA or EIS depends on the significance of the effects,</p>	No EA change required.

Com-ment #	Commentor	COMMENT/RESPONSE	INTEGRATION STATUS (EA ADDITION/CORRECTION)
		<p>which are in part determined by the intensity or severity of the effects. One of the ten listed considerations (BLM Manual H-1790-1) for determining the severity of an effect is, as noted in the comment, the degree to which the action may establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6)).</p> <p>The proposed action does not authorize surface disturbing activities or the mining of potash. It authorizes the leasing of publically owned potash resources. Within the leasing analysis, the BLM has analyzed a reasonable scenario of mining of the resource to provide a basis for analysis of potential environmental impacts, identify appropriate mitigation, and inform the decision. The authorization to mine will come only after 43 CFR 3590.2(a) has been met with appropriate environmental analysis. Any further mitigation will be attached as conditions of approval on the approved mining plan under 43 CFR 3592.1. 43 CFR 3592.1 (a) states that “No operations (including surface disturbance) shall be conducted except as provided in an approved plan”. The approval of the mining plan allows development under the lease and the lease cannot be developed or operated without an approved mining plan per 43 CFR 3492.2(d). Also see response to Comment #5.</p> <p>Thus, under the consideration for evaluating intensity or severity of effects (40 CFR 1508.27(b)(6)), the leasing decision establishes a framework for other actions, but not for surface-disturbing actions. Such decisions would be made based upon additional NEPA review. Additional NEPA review would be conducted in order to consider development of potassium leases. Therefore, the leasing action would not be considered a precedent for significant adverse effects and therefore would not trigger an EIS.</p>	
10	SUWA	<p>RMP Consistency – The Warm Springs RMP does not mention or contemplate potash leasing and does not adequately analyze or consider current resource issues. The RMP does not provide sufficient analysis to support new potash leasing.</p> <p><u>Response:</u> As discussed in the EA Section 1.5, the Warm Springs RMP page 49 allows leasing for solid leasable minerals as follows: “Solid Non-Energy Leasable Minerals. Prospecting permits will be processed and appropriate environmental protection stipulations</p>	Added text to Section 1.5.

Com- ment #	Commentor	COMMENT/RESPONSE	INTEGRATION STATUS (EA ADDITION/ CORRECTION)
		<p>attached. Leases will be issued and mining plans evaluated in order to define appropriate stipulations to protect other resource values.” Solid leasable minerals are defined in 43 CFR 3501.5. This includes various salts of potassium (potash) and sodium. The RMP designates areas open to solid leasable mineral leasing. Sevier Dry Lake is designated as open. The RMP analysis was not anticipated to be full NEPA analysis, therefore, this EA is being prepared as will future NEPA documents when specific mining plans are received and determined by the BLM to be complete. Also see response to Comment #9. The proposed leasing action is consistent with activities previously analyzed and permitted within the Fillmore Field Office. See EA Appendix C, which describes previous NEPA-documented proposals for exploration and development of Sevier Lake.</p> <p>In addition, as described in the EA Section 1.5, the Warm Springs RMP EIS describes then-ongoing exploration activities: “One operator is conducting exploration activities under an approved exploration plan in connection with extended potassium prospecting permits in the Sevier Lake area”. The BLM understands that issuance of prospecting permits may lead to mineral leasing, and thus it is likely that the RMP process contemplated potassium leasing. Per 43 CFR 3501.10(a) “Prospecting permits let you explore for leasable mineral deposits on lands where BLM has determined that prospecting is needed to determine the presence of a valuable deposit.” Based upon exploration of the Sevier Lake resources in the late 1980’s, Crystal Peak was issued preference right leases for potassium on the entire lakebed. Preference right leases for potassium are obtained by those holders of prospecting permits who demonstrate discovery of a valuable deposit and in addition, per 43 CFR 3507.11(b) <i>BLM must determine that the lands are chiefly valuable for the subject minerals.</i></p>	

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
11	SUWA	<p>The EA does not adequately explain BLM's protest over Emerald Peak Mineral's water rights applications.</p> <p><u>Response:</u> The application to appropriate the water rights were filed with the State of Utah prior to the analysis contained in this EA. The BLM sought to protect water resources in the area through the protest of the application to appropriate. Through the protest procedure BLM is seeking to include stipulations identified in the EA which will protect these water resources.</p>	No EA change required.
12	SUWA	<p>A recent visual resource inventory suggests that the area may fall under VRM Class 3 and that the impacts of development may require further stipulations if considered a VRM Class 3.</p> <p><u>Response:</u> The BLM appreciates this comment and has corrected the EA text on pages 11 and 52 to remove the term VRM and use the correct term Visual Resource Inventory Class III. As described in the EA, the management category for this area is VRM Class IV. The Visual Resource Inventory (VRI) was disclosed in Chapter 1 of the EA and described in the IDT checklist (EA Appendix A). Additional information as follows, has been added to the EA for explanation purposes: Visual "inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. They do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities" (BLM Manual H-8410-1). For the purposes of the future NEPA document prepared for any proposed mining-related surface disturbance, BLM may consider mitigating for texture, line & form to minimize visual disturbance in order to meet Visual Resource Management (VRM) Class 3 objectives.</p>	Error corrected, EA sections 1.7 and 3.3.6; additional clarification added.
13	SUWA	<p>Because the visual inventory constitutes significant new information, BLM cannot approve the leasing proposal without undertaking a land use plan amendment or preparing a new land use plan- BLM Handbook 1601-1 at 45 (Section VII.A).</p> <p><u>Response:</u> See response to Comment #12. The visual resource inventory is not considered by the BLM as significant new information and therefore the decision on this leasing proposal does not require a land use plan amendment or completion of a new land use plan.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
14	SUWA	<p>“The NHPA is a procedural statute designed to ensure that, as part of the planning process for properties under the jurisdiction of a federal agency, the [BLM] takes into account any adverse effects on historical places from actions concerning that property.” <i>Friends of the Atglen-Susquehanna Trail Inc. v. Surface Transp. Bd.</i>, 252 F.3d 246, 252 (3rd Cir. 2001) (citation omitted).</p> <p><u>Response:</u></p> <ol style="list-style-type: none"> 1. Agreed. This project (i.e., leasing parcels) is an undertaking and compliance with the Utah State Historic Preservation Office (USHPO) was completed. BLM determined that the undertaking would have a “No Adverse Effect” on Historic Properties. The BLM consulted with the USHPO and the USHPO concurred with the agency determination, see letter received May 17, 2010. 2. To comply with the National Historic Preservation Act (NHPA) at the potash leasing stage, BLM must: (1) identify the area of potential effect (APE) under consideration; (2) identify properties within the APE that are listed as historic properties or eligible for inclusion in the National Register of Historic Places; and (3) determine whether the proposed leasing may have adverse effects on the listed or eligible properties. In the event BLM concludes that the leasing may have adverse effects, it must identify ways of avoiding, minimizing, or mitigating those adverse effects. The BLM consulted with the USHPO in the early stages of the project, in a meeting held on February 24, 2010, at the USHPO’s office, USHPO and BLM determined that the Area of Potential Effect (APE) would be defined as the entire lease parcel boundary. 3. The agency followed the procedures identified in 36CFR800.4 and 36CFR800.5. In consultation with the USHPO, the BLM determined the scope of identification efforts. Based on the magnitude and nature of the undertaking, the BLM, in consultation with the USHPO, determined the Class I inventory sufficient to make a determination of “No Adverse Effect”, see USHPO concurrence letter received on May 17, 2010. A stipulation was added to the lease parcels: “<i>Prior to conducting any surface disturbing activities, the Lessee shall contact the Authorized Officer with sufficient information and request a determination if a cultural inventory and/or tribal consultation is necessary. If it is necessary, the lessee shall conduct a cultural resource inventory to BLM Utah Class III</i> 	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p><i>inventory standards on all lands that may disturb the surface within the boundaries of the leased lands. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e. Archaeologist, historian, or historical architect, as appropriate), approved by the Authorized Officer (AO). A report shall be generated of the inventory and recommendation for protecting any cultural resources that are identified. The lessee shall undertake measures, in accordance with instructions from the AO to protect cultural resources on the leased land. The lessee shall not commence the surface disturbing activities until permission to proceed is given by the AO. The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the lessee. The lessee shall protect all cultural resource properties within the lease area from lease related activities until the cultural resource mitigation measures can be implemented.”</i> BLM consulted with Native American Tribes. On May 7, 2010, BLM FFO sent a letter and the Class I Inventory Report (Bighorn, 2010) to Native American Tribes inviting them to comment on the project and to provide assistance in identifying properties of traditional, religious, or cultural importance that may be impacted by the project. The letter was sent to the Paiute Tribe of Utah (PITU), Kanosh Band of the Paiute Tribe, Confederated Tribes of the Goshute Reservation, Skull Valley Goshute Tribe, and Uintah Ouray Ute Tribe. Follow-up calls were made to the tribes to discuss the project proposal, answer questions and facilitate identification of concerns. No Tribal concerns pertaining to leasing of the potash parcels have been identified.</p>	
15	SUWA	<p>NHPA § 106 (“Section 106”) requires federal agencies, prior to approving an “undertaking,” to “take into account the effect of the undertaking on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register.” 16 U.S.C. § 470(f). The federal courts have reiterated that Section 106 applies to properties already listed in the National Register, as well as those properties <i>that may be eligible</i> for listing. See <i>Pueblo of Sandia v. United States</i>, 50 F.3d 856, 859 (10th Cir. 1995).</p> <p><u>Response:</u></p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		See response to Comment #14.	
16	SUWA	<p>The first step in Section 106 compliance is establishing whether an agency’s action is an “undertaking,” and if so, “whether it is a type of activity that has the potential to cause effects on historic properties.” 36 C.F.R. § 800.3(a). The NHPA’s implementing regulations define an “undertaking” as “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency.” <i>Id.</i> § 800.16(y).</p> <p><u>Response:</u> This project is an undertaking and compliance with the Utah State Historic Preservation Office (USHPO) was completed. See response to Comment #14.</p>	No EA change required.
17	SUWA	<p>If any undertaking has the potential to cause effects, BLM must “[d]etermine and document the area of potential affect [“APE”], as defined in 36 C.F.R. § 800.16(d),” for a particular undertaking. 36 C.F.R. § 800.4(a).</p> <p><u>Response:</u> BLM identified the area of potential effect as the leasing area. See response to Comment #14.</p>	Text added at Section 3.3.2.
18	SUWA	<p>If an undertaking is the type that “may affect” an eligible site, the agency <i>must</i> make a reasonable and good faith effort to seek information from consulting parties, other members of the public, and Native American tribes and assess adverse effects, if any. See 36 C.F.R. § 800.4(d)(2). See also <i>Pueblo of Sandia</i>, 50 F.3d at 859-863 (holding that Forest Service failed to make reasonable and good faith effort to identify historic properties).</p> <p><u>Response:</u> The agency followed the procedures identified in 36CFR800.4 and 36CFR800.5. In consultation with the USHPO, the BLM determined the scope of identification efforts. Based on the magnitude and nature of the undertaking, the BLM, in consultation with the USHPO, determined the Class I inventory sufficient to make a determination of “No Adverse Effect”, see USHPO concurrence</p>	Text added in Section 3.3.2, Table 5-1.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>letter received on May 17, 2010.</p> <p>Further, BLM consulted with Native American Tribes. On May 7, 2010, BLM FFO sent a letter and the Class I Inventory Report (Bighorn, 2010) to Native American Tribes inviting them to comment on the project and to provide assistance in identifying properties of traditional, religious, or cultural importance that may be impacted by the project. The letter was sent to the Paiute Tribe of Utah (PITU), Kanosh Band of the Paiute Tribe, Confederated Tribes of the Goshute Reservation, Skull Valley Goshute Tribe, and Uintah Ouray Ute Tribe. Follow-up calls were made to the tribes to discuss the project proposal, answer questions and facilitate identification of concerns. No Tribal concerns pertaining to leasing of the potash parcels have been identified.</p>	
19	SUWA	<p>The NHPA's regulations confirm that adverse effects can include "[a]lteration of a property, including restoration, rehabilitation, repair...that is not consistent with the Secretary's standards for the treatment of historic properties" as well as "[c]hange . . . of physical features within the property's setting that contribute to its historic significance." <i>Id.</i> § 800.5(a)(2). (adverse effects also include</p> <p>"[i]ntroduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.").</p> <p><u>Response:</u> The BLM determined and USHPO concurred that the leasing proposal would have No Adverse Effect on historic properties. See response to Comment #14.</p>	No EA change required.
20	SUWA	<p>Leasing is an irreversible and irreversible commitment of agency resources. <i>Montana Wilderness Ass'n v. Fry</i>, 310 F. Supp. 2d 1127, 1152-53 (D. Mont. 2004) ("BLM's contention that the sale of oil and gas leases is not an undertaking is not supported by the statute or the regulations."); <i>Southern Utah Wilderness Alliance</i>, 164 IBLA 1, 22-24 (2004).</p> <p><u>Response:</u> See response to Comment #9.</p>	No EA change required.
21	SUWA	<p>In the EA, BLM acknowledged that the leasing proposal being considered in the EA constitutes an undertaking that has the potential to cause constitutes effects to historic properties. BLM determined that the area of potential affect was within one mile of the area</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>proposed to be leased. EA at 31. BLM conducted a Class I literature review of the APE and identified 25 archeological sites. EA at 31, 59. The EA acknowledged that that “[t]here could be impacts to NRHP-eligible cultural resources” as a result of approving this undertaking. EA 59.</p> <p><u>Response:</u> See response to Comment #14.</p>	
22	SUWA	<p>Of particular importance, one of these previously identified sites is a significant “late archaic” burial site. <i>Id.</i> at 39. <i>See also</i> Nancy Shearin <i>et al</i>, “A Late Archaic Burial from the Thursday Site, Utah, 18 Journal of California and Great Basin Archeology 1 (1996) (attached hereto as Attachment 7). In her article, Former Fillmore field office archeologist Nancy Shearin described the Thursday Site (42MD1053) as a “a large, multicomponent prehistoric site that encompasses part of the north shore of Sevier Dry Lake near the mouth of the Sevier River. [] Artifact concentrations and cultural features are scattered over a three-mile arc with clusters occurring near river paloechannels and in association with deltaic deposits. Shearin, at 1.</p> <p><u>Response:</u> “The Thursday Site” (42Md1053) was included within the Class I literature review conducted by the FFO archeologist and was considered during the SHPO consultation. Leasing stipulations and future Section 106 compliance associated with any proposed lease development would avoid, minimize, or mitigate any adverse effects associated with those proposals.</p>	No EA change required.
23	SUWA	<p>BLM too narrowly and arbitrarily defined the APE for this undertaking. SUWA agrees with BLM that potash leasing and development may adversely affect historic properties outside of the actual lease boundaries. EA at 31 (APE a one mile buffer outside the lease boundaries). There is no explanation, however, why the adverse effects would be limited to one mile and not – logically – also include historic properties located on the adjacent flats, benches and mountains. <i>See</i> 36 C.F.R. § 800.5(a)(2)(v) (adverse effects include “[i]ntroduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features.”).</p> <p><u>Response:</u></p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>BLM consulted with the USHPO in defining the APE as the entire lease parcels boundary. The Class I literature review included a one-mile buffer which is a standard procedure when reviewing previous projects and known cultural resources in the vicinity of a proposed project.</p> <p>No actual development is proposed as part of the leasing project, therefore no visual, atmospheric, or audible impacts would occur in the APE or beyond. Leasing stipulations and future Section 106 compliance associated with any proposed lease development would analyze and then avoid, minimize, or mitigate any adverse effects associated with those proposals and their appropriate APE.</p>	
24	SUWA	<p>Despite acknowledging that that “[t]here could be impacts to NRHP-eligible cultural resources,” the EA did not assess those adverse effects as required by 36 C.F.R. § 800.5. Put another way, once BLM conceded that there “are historic properties which may be affected by the undertaking,” the agency was obligated to share those findings with the state historic preservation officer (SHPO), Native American tribes and the public and assess the adverse effects. 36 C.F.R. § 800.4(d)(2).</p> <p><u>Response:</u> One of the issues identified during project scoping included evaluating potential impacts to NRHP-eligible cultural resources. All known resources within one mile of the lease parcels were included in the Class I review and analyzed in the EA. Based on available information and implementation of the lease stipulation, BLM determined that the undertaking would have “No Adverse Effect” on Historic Properties. The agency consulted with the USPHO on the effects of the undertaking on Historic Properties and the USHPO concurred with the agency determination in a letter received on May 17, 2010. Further, BLM consulted with Native American tribes as noted in Table 5-1 of the EA. See response to Comment #18.</p>	Text added to Section 3.3.2, Table 5-1. Issue statement slightly revised in both Section 1.7 and 3.3.2.
25	SUWA	BLM’s May 2010 correspondence with the SHPO is inconsistent with the EA’s acknowledgment that there may be adverse effects from the undertaking. BLM’s May 4, 2010 letter to the SHPO states that “it has been determined that reasonable development could occur without adverse impact to cultural properties eligible to the NRHP [National Register of Historic Places]. . . . The FFO has determined that the proposed undertaking will have No Adverse Effect on historic properties.” Letter from Joelle McCarthy, FFO to Lori Hunsaker,	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>SHPO (May 4, 2010) (emphasis in original). To the contrary, and as discussed above, the EA concedes that effects are possible. See EA at 59.1</p> <p><u>Response:</u> See response to Comment #24.</p>	
26	SUWA	<p>It is unclear what efforts BLM made to consult with Native American tribes (the Fillmore field office's letters to tribes was not made available online and SUWA has not yet been able to obtain copies of these letters from Ms. McCarthy), but it seems virtually certain that the agency did not inform the tribes about the potential for adverse effects or the significance of adjacent sites.</p> <p><u>Response:</u> Tribal consultation was noted in Table 5-1 of the EA. BLM initiated Native American consultation on a government-to-government basis. On May 7, 2010, BLM FFO sent a letter and the Class I Inventory Report (Bighorn, 2010) to Native American Tribes inviting them to comment on the project and to provide assistance in identifying properties of traditional, religious, or cultural importance that may be impacted by the project. The letter was sent to the Paiute Tribe of Utah (PITU), Kanosh Band of the Paiute Tribe, Confederated Tribes of the Goshute Reservation, Skull Valley Goshute Tribe, and the Uintah Ouray Ute Tribe. Follow-up calls were made to the tribes to discuss the project, answer questions and facilitate identification of concerns. No tribal concerns pertaining to leasing of the potash parcels have been identified. Once a plan of operations is received, the BLM will continue consultation.</p>	Text added in Section 3.3.2, Table 5-1.
27	SUWA	<p>BLM must revisit its efforts to comply with Section 106 as discussed above, including expanding the APE, assessing potential adverse effects, and then notify and reconsult with the SHPO, tribes and the public.</p> <p><u>Response:</u> The BLM consulted with the USHPO on the effects of the agency determination in a letter received May 17, 2010. Native American consultation was initiated on May 7, 2010. See response to Comment #18. The BLM has complied with Section 106 of the NHPA.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
28	SUWA	<p>Attachment 8 to these comments is significant new information submitted by SUWA staff detailing the Sevier Lake wilderness character area. BLM must consider this significant new information before approving this leasing proposal.</p> <p><u>Response:</u> The BLM has considered the information that SUWA has presented in Attachment 8. Past actions including wells, trenches, roads, trails, casual recreation use and various access roads from Highway 50 & 6 to the lakebed pre-date the Proposed Action and Attachment 8. SUWA's "Sevier Lake Wilderness Character Area" map includes numerous roads that are classified as improved in the Millard County roads database (AGRC 2007) as well as over twenty SITLA parcels.</p> <p>Under Secretarial Order No. 3310 and newly issued DRAFT BLM Manual 6300-2.1, Procedures for Considering LWCs (Lands with Wilderness Characteristics) in Land Use Planning, manageability is one of the factors that BLM needs to consider in determining whether an area should (or could) be managed for its wilderness values. "In addressing manageability, assess the potential impact of providing access to non-Federal inholdings." SITLA has issued leases for potash on parcels in Sevier Lake. A second consideration in the same guidance is titled Resource Values and Uses, which lists the following:</p> <ol style="list-style-type: none"> 1. <u>Presence of Other Resources.</u> The degree to which the other resource or use is present in the LWC; 2. <u>Development Potential.</u> The potential for further development of the other resource in the LWC; 3. <u>Resource Availability.</u> The degree to which the other resource or use is present on other public and private lands outside the LWC; 4. <u>Economic Importance.</u> Local or regional economic dependence on the resource in the LWC; and 5. <u>Compatibility with Protection.</u> The degree to which use or development of the resource is compatible with or conflicts with management of the LWC as Wild Lands. If the area can be developed for potash and then reclaimed in a way that would restore the resources of the area as they now exist, that would be considered in determining whether the potash resource should be developed. <p>BLM recently conducted a wilderness inventory for the proposed leasing area, to identify LWC's. The results of this inventory are on</p>	Text added in Section 1.8.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>file at the BLM FFO and summarized as follows:</p> <p>The inventory followed direction in the 2010 draft Wilderness Inventory Manual 6300-01 and determined that the inventory area consisting of 206,458 acres of public land evaluated by the Fillmore Field Office staff does not contain wilderness characteristics. Documentation of the inventory is consistent with the Manual and is maintained at the FFO.</p>	
29	SUWA	<p>The EA fails to demonstrate how BLM's approval of leasing and the accompanying development (particularly the post-production phase) will comply with federal air quality standards.</p> <p>Response: The project area is currently in compliance with federal air quality standards. As noted in the Utah Division of Air Quality (UDAQ) publication "PM10 Exceptional Wind Event" (2009), SUWA Attachment 9, exceptional (as defined in 40 CFR 50.1 (j)) high wind events have caused as many as six exceedances of the 24-hour PM10 standard of 150 µg/m³ between 1993 and 2008 at locations from Linden to North Salt Lake. These exceedances are attributed to dust from the Sevier Desert (including Sevier Lake), the Salt Flats west of the Great Salt Lake, and the Milford Flats fire of 2007 (UDAQ 2009). These exceedances fit the regulatory definition of being exceptional events by virtue of meeting the criteria of "an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event." As per 40 CFR 50.14, EPA excludes "data showing exceedances or violations of the national ambient air quality standard that are directly due to an exceptional event from use in determinations" of compliance. Under the Clean Air Act, at 42 U.S.C. 7513 (f), it states that the EPA may waive attainment requirements "where the Administrator determines that anthropogenic sources of PM-10 do not contribute significantly to the violation of the PM-10 standard in the area. The Administrator may also waive a specific date for attainment of the standard where the Administrator determines that non-anthropogenic sources of PM-10 contribute significantly to the violation of the PM-10 standard in the area."</p> <p>It is unlikely the project will cause an increase in particulate (dust) emissions which could jeopardize compliance with air quality</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>standards due to the suppression of existing lakebed dust sources by covering them with liquid, as well as by implementing Best Management Practices for dust suppression that would be required under any mining permit. The post-production phase would not leave the area in a condition which would conceivably result in any increase in dust emissions over existing (natural background) conditions.</p> <p>See also the response to Comment #6.</p>	
30	SUWA	<p>The EA has not discussed how reclamation of the dry lake bed will take place or how it will succeed.</p> <p>Response: Stipulations provided in Section 2.2.2 of the EA , including stipulations 1 (Ditches, Berms, Drill Holes and Other Excavations) and 7 (Reclamation) require reclamation and provide reclamation standards of success. In addition, in reviewing and approving a specific mine plan BLM will attach Conditions of Approval (COAs) as needed to assure that appropriate reclamation is carried through. Stipulation 7 requires a reclamation bond which would further assure that reclamation is funded and carried out.</p>	No EA change required.
31	SUWA	<p>BLM has not developed any successful reclamation strategies for the Sevier Lake playa that will prevent significant dust storms after the evaporation ponds are removed or abandoned.</p> <p>Response: From 1880 until 1983 there was little or no water in Sevier Lake except for a thin film during a few unusually wet years (Gilbert, 1890, p. 225; Wehlan, 1969). From 1987 to present this situation has continued. This situation has resulted in exposed lake sediments which are highly saline, which will not support vegetation, and are easily transported by wind. This situation will likely continue with or without the proposed leasing. Stipulation 1 requires that ditches, pits and other excavation are filled and restored to their former conditions as far as reasonably possible. After the ponds dry up there will be salt on the bottom of the ponds that will help protect some of the surface from wind erosion. Project proponents cannot be expected to improve conditions beyond pre-project natural background levels.</p> <p>See also responses to Comments #6, #29, and #30.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
32	SUWA	<p>No analysis has been made of conditions after development has been completed or if the development sites are abandoned. Thus it is inappropriate for the EA to conclude that air quality will not be harmed or will only have minor impacts from this development.</p> <p>Response: 43 CFR 3504.050 requires a bond that considers the cost of compliance with lease terms. As discussed above Stipulations 1, 7, & 9 above both require reclamation and BLM would have a bond sufficient to cover the reclamation. See responses to Comments #6, #29, #30, and #31.</p>	No EA change required.
33	SUWA	<p>The EA does not satisfy BLM's duty to demonstrate compliance with federal air quality standards, particularly given the concerns related to particulate matter pollution from this area in the Wasatch Front. Because of this, BLM should choose the no action alternative or prepare an environmental impact statement to fully analyze these impacts.</p> <p><u>Response:</u> See responses to Comments #6, and #29-32.</p>	No EA change required.
34	SUWA	<p>The EA has not discussed the potential impacts of this decision on the snowpack of mountain ranges downwind of the Sevier Lake, locations such as the Wasatch Mountains and the Wasatch Plateau as well as the Pahvant Range.</p> <p><u>Response:</u> The snowpack levels were not presented as a resource concern during scoping for this EA. The BLM feels that the ground disturbance associated with this project will not create additional significant impacts to air quality or regional dust production which might impact snowpack at the Wasatch Front. Dust from Sevier</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>Lake sediments is considered a natural source that has likely contributed dust to the local and regional airsheds for decades, if not centuries. USEPA AirData database for Lindon shows 6 exceedances of the 24-hour PM10 standard of 150 µg/m³ between 1998 and 2008 and none for Provo. UDAQ (2009) attributes six PM10 exceedances at Lindon to high wind events from 1993 to 2008; one at Cottonwood (1993-2008); three at Hawthorne (1997-2008); and five at North Salt Lake (1993-2008). Annual geometric mean PM10 concentrations for these stations were 25.38 µg/m³ at Lindon, 25.10 µg/m³ at Cottonwood, 22.48 µg/m³ at Hawthorne, and 37.42 µg/m³ at North Salt Lake (note that some exceedances are due to inversions) (UDAQ 2009). This strongly suggests that, in the context of annual volume of airborne dust that might impact snow albedo, dust from Sevier Lake is negligible to minor. Studies indicate that, before the exceptional event of April 15, 2008, PM10 at Lindon was dominated by anthropogenic sources (73 percent) but not during the April 15 event (30 percent anthropogenic source material) (UDAQ 2009).</p> <p>Impacts to the snowpack at the Wasatch Front from the implementation of a mining plan with a dust control plan in place are unlikely.</p>	
35	SUWA	<p>In Secretarial Order 3289, Secretary Salazar stated that BLM “must consider and analyze potential climate change impacts when undertaking long-range planning exercises.”</p> <p><u>Response:</u> This leasing EA does not constitute a long-term planning exercise.</p>	No EA change required.
36	SUWA	<p>The EA does not contain or reference greenhouse emissions.</p> <p><u>Response:</u> ID Team Review of climate change and greenhouse gases was sufficient to comply with Secretarial Order 3289.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
37	Audubon	<p>The EA indicates that at least one other company has expressed interest, but apparently no proponent has emerged that is serious enough to finance studies needed to determine the environmental impacts. With several previous EAs completed for mining on the lake, it is uncertain why BLM did not wait for a development proposal and opted to produce a leasing EA.</p> <p><u>Response:</u> This competitive leasing EA analyzes the general impacts associated with allowing leasing within the analysis area. BLM analyzes scenarios for development of the leases, but cannot accept a specific development proposal until the leasing process is complete. Under the regulations, the leasing is open to anyone that can meet the qualifications to hold a lease, submit a bid that exceeds or meets Fair Market Value and can provide a lease bond and submit the first year's rental. At that time the BLM will have to look at specific development proposals. 43 CFR 3590.2 (a) states that the Authorized Officer of the BLM can approve an operating plan (mining plan) after preparation of appropriate environmental analyses. See also response to Comment #9.</p>	No EA change required.
38	Audubon	<p>Alternatives A and C exceed the maximum potash lease size of 2,560 acres imposed by the 43 CFR Part 3500, and the Proposed Action (A), exceeds the 96,000 acre limit of 43 CFR 3503.37.</p> <p>Response: There is a misunderstanding. The BLM has developed alternatives for 96,000 acres and 120,000 acres to be leased. The leases themselves cannot exceed 2560 acres each, as noted in Section 2.1. The individual lease tracts (of 2560 acres each or less) are shown on Figures 2 and 3 of the EA. One person or entity cannot hold more than 96,000 acres of potassium leases in any one state (unless there is an existing operation for brine concentration). BLM is looking at offering the entire lake playa (120,000+) acres for lease sale.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
39	Audubon	<p>The EA fails to discuss bird usage of the area during the 1980's time period when the water level was high.</p> <p><u>Response:</u> Through our research of the literature, the BLM has not identified any studies or published information regarding bird use of the Sevier Lake playa during the 1980s; as noted, that information is not available or well documented. It is anticipated that birds currently use the Sevier Lake playa, but the level of such use is unknown. If the development of a potash extraction facility is pursued, the lessee will be required to submit a plan to survey, inventory, and monitor wildlife, including migratory birds (EA Stipulation No. 9).</p>	No EA change required.
40	Audubon	<p>Given that Sevier Lake is a major part of the flyway for aquatic birds, we are concerned that any new water sources in the region/flyway will be a significant attractant to birds and that birds could die from landing in the salt ponds.</p> <p><u>Response:</u> The BLM concurs that the according to the US Fish and Wildlife Service, Sevier Lake playa does fall in the Pacific flyway. Birds from this flyway could be expected to use the project area and the development of open water habitat may attract migratory birds. The BLM recognizes that the development of open water habitats may provide an opportunity to create and improve habitat values conducive to migratory birds. If potash production is pursued, steps per Stipulation No. 9 will be taken to develop a plan to avoid/minimize any impacts to birds and attempt to improve habitat values throughout the life of the project.</p>	Text added to EA Section 3.3.4.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
41	Audubon	<p>If Sevier Lake attracts migratory birds, this could be a benefit, but the EA does not address what those benefits would be – beneficial consequences including attracting migrating bird populations.</p> <p><u>Response:</u> You are correct. Page 61, section 4.2.1.4 states that the “Ponds containing water that is in low dissolved salts may be beneficial habitat for such birds”. However the statement does is not clear as to what, how, or why it would be beneficial. BLM has provided language that describes how low salinity water is more hospitable to birds and the growth of brine shrimp and creating open water habitat may provide a resting and foraging habitat for migrating birds.</p>	Text added to EA section 4.2.1.4.
42	Audubon	<p>The ability to preserve the brine fly and brine shrimp resource was not addressed in the Environmental Assessment.</p> <p><u>Response:</u> The Seveir Lake Basin has been greatly altered since the turn of the 20th century and has for the most part, except for the occasional high water event, has remained dry for long periods of time. Control of the Sevier River has prevented the influx of fresh water reaching the playa that could provide conditions conducive to productive brine fly and brine shrimp production as might be observed on the Great Salt Lake. Any water that now accumulates from primarily small tributaries adjacent to the playa and from precipitation becomes highly saline inhibiting the reproduction of brine fly and brine shrimp. Presently there is an absence of evidence to suggest a productive brine fly and brine shrimp occurrence. However, we appreciate your input and your concerns regarding brine flies and brine shrimp and will carry forward this topic in the development of the biological assessment if potash production is pursued.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
43	Audubon	<p>There is no mention of beetles in the language of the wildlife stipulation or in the EA. Some beetles are adapted to harsh environments; the Sevier Lake area may provide habitat for these beetles if/when soil moisture is sufficient.</p> <p><u>Response:</u> Beetles were not specifically addressed in the EA, other than the salt cedar leaf beetles released along the lower Sevier River to assist in tamarisk reduction (EA Section 3.3.8). Most of the discussion pertained largely to migratory birds and their use of the Sevier Lake playa. There is limited information available on the current ecology of the Sevier Lake playa; the biological information gathered under the lease requirements will begin to provide background data on the types of species found on the Sevier Lake playa. The ecology of the playa is not suggested to be nearly as productive or exclusive for beetles or migratory birds as the Great Salt Lake system. BLM appreciates your input and your concerns regarding beetles and will carry forward the topic in the development of the biological assessment if potash production is pursued.</p>	No EA change required.
44	Audubon	<p>The importance of soil moisture on Sevier Lake is inadequately addressed.</p> <p><u>Response:</u> BLM recognizes the importance of wetlands, especially saline wetlands to plant and bird/wildlife communities in Utah Deserts. The examples provided by the Audubon Society in the comment pertain to the Gillmor Sanctuary Lee Creek area of the Great Salt Lake Ecosystem. BLM looked at the soils, vegetation, and wetland classification for this area and compared it to the soils, vegetation, and wetland information available for the Project Area. The Gillmor Sanctuary is predominantly wetland soils and playas and contains the wet saline marsh ecological type as a dominant ecological community. The project area does contain playas and some areas of hydric soils but the dominant ecological site is either barren playa or Desert Salty Silt (Iodine Bush) which is less productive habitat and is not anticipated to support the same kinds of wildlife, birds, or insects as the Gillmor Sanctuary provided as an example. The BLM has placed Stipulation 16 to completely identify the riparian and wetlands and Stipulation 13 to provide any analysis required to show if there are any impacts. 43 CFR 3590.2(a) BLM regulations as stated above require that the BLM can approve a mining plan after an appropriate environmental analysis is conducted.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
45	Audubon	<p>We are concerned about how increased traffic would impact wildlife, and how roads would impact wildlife corridors.</p> <p><u>Response:</u> The BLM has included a lease stipulation as part of the proposed action that discusses this issue. Stipulation # 9 states in part “The inventory plan shall address, but not be limited to the following: species occurrence, migration corridors ...”.</p> <p>The extent of roads which would be required during mineral development is currently unknown, however is expected to include access to all the project elements described in the proposed scenarios for leasing. The actual types and placement of roads would be analyzed as part of the NEPA document on the operations plan including any associated rights-of-way.</p>	No EA change required.
46	Audubon	<p>The omission of “per year” in the EA page 25, associated with the figure 120,000 acre-feet of brine makes it more difficult to determine the amount of water that would be used for this project.</p> <p><u>Response:</u> Thank you; the EA has been updated to correct this omission.</p>	Corrected in EA
47	Audubon	<p>The EA needs to be more transparent regarding water usage.</p> <p><u>Response:</u> The BLM studied two Utah potash operations and based the analysis on those operations. The BLM used the specifications from these operations in order to determine potential impacts for the leasing scenarios. Additional information regarding water use and analysis will be provided under lease stipulation No. 13 (Hydrologic Analysis) and in the NEPA analysis conducted on an operations plan.</p> <p>Also, the EA does not assume a ‘marginal impact’ on Sevier Lake, as the comment indicates.. EA page 71, states:...”the Proposed Action assumes an additional need for deep brine wells and shallow intercepting ditches, which would result in consumption through evaporation of approximately 120,000 acre-feet per year of very saline water (brine). These wells and ditches would need to be placed either within or in very close proximity to the lake bed. The brine consumed would also result in a loss from the current water balance, though in part would simply accelerate an already high evaporative loss from this area of natural groundwater discharge. While the combined quantities of fresh and briny waters that would be needed under the Proposed Action are less than the amounts applied for by the two entities whose applications are currently under</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>protest (discussed above in Section 3.3.10), it is likely that any new water rights or changes to existing water rights would similarly be closely scrutinized. In part, it would be the responsibility of the State Engineer to ensure that other existing water rights would not be harmed by granting any related water rights approvals.”</p>	
48	Audubon	<p>The extent and impact of (water) mining is unknown and not addressed.</p> <p><u>Response:</u> See response to Comment #47.</p>	Text added to EA section 2.1
48a	Audubon	<p>The loss of water doesn't include the relationships among lake level, surface area, salinity, and evaporation rates.</p> <p><u>Response:</u> The EA, on pages 71 and 72, discusses the fact that brine consumption by a project proponent would change the water balance. However, it goes on to state that the level of change cannot be determined at this leasing stage, and it provides a stipulation (No.13) whereby additional analysis would be required to occur in conjunction with a development proposal. This eventual analysis would take into consideration the interrelationships contained in the comment as well as the many other components that are needed to derive a meaningful water balance.</p>	No EA change required.
49	Audubon	<p>We strongly assert that this stipulation (8) is faulty to the extreme. We assert that water lost to the system, not just water with a low TDS should be replaced. And we do not see how 780,000 acre-feet of water could easily be replaced to the system.</p> <p><u>Response:</u> The water that is over 10,000 mg/L Total Dissolved Solids (TDS) is not usable for drinking water purposes for most animals (sheep can withstand TDS levels up to 13,000 mg/L for very short time periods) humans and plants. The majorities of the salt resources lie subsurface on the Sevier Dry Lake playa and can be</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		recovered utilizing the “brine” resource. This brine resource becomes the transport mechanism for the evaporative minerals in and under the playa. Because it is not a useable resource for plants or animals, it was not included in the stipulation. The average brine analyses TDS in the lake bed during the past exploration efforts were recorded at over 200,000 mg/L.	
50	Audubon	<p>We are concerned that the loss of groundwater could impact the water levels at Clear Lake Waterfowl Management Area.</p> <p><u>Response:</u> When the mining plan is prepared which would include ground water modeling, all surrounding wetland areas would be considered within a close proximity. It is not possible to determine the potential for effects on Clear Lake Waterfowl Management Area with what is currently known. A project-specific NEPA analysis would have to consider potential effects to all areas for which the required ground water modeling (Stipulation No.13) shows a hydrologic connection to both Sevier Lake and any proposed well locations. Based upon the outcome of this modeling, any potential changes to water levels at Clear Lake would be disclosed in a future NEPA document. Further, Stipulation No.8 would require water replacement under the circumstances given in the EA.</p>	No EA change required.
51	Audubon	<p>Page 51 of the Environmental Assessment indicates that it is not conclusive whether or not the Sevier Lake basin is connected to the Snake Valley Basin to the west of Sevier Lake.</p> <p><u>Response:</u> The EA accurately and appropriately stated that a connection between Sevier Lake Basin and Snake Valley Basin is not conclusively known. Further, it is beyond the scope of this leasing EA to undertake the level of background study that would be needed in order to determine whether such a connection exists or confirm that it doesn't. It also discussed the fact that it is not possible to determine the potential for ground water effects until a development proposal is made and until the required studies (see Stipulation #13) are completed by a future proponent. Future studies would address the hydrologic connectivity between the two basins and would address potential effects based upon those studies. These studies would also include Tule Valley and other surrounding areas which are shown to have a hydrologic connection, including alluvial and bedrock aquifers.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
52	Audubon	<p>We are also concerned about the possible impacts on groundwater in the Snake Valley area due to possible impacts on Fish Springs National Wildlife Refuge.</p> <p><u>Response:</u> Please see the response to Comment #51. The analysis done as per Stipulation No.13 would address any potential impacts to Snake Valley and to Fish Springs National Wildlife Refuge as needed based upon the outcome of the groundwater modeling. The analysis would be based upon a specific development proposal. Further, Stipulation #8 would require water replacement under the circumstances given in the EA.</p>	No EA change required.
53	Audubon	<p>The BLM should withdraw this EA until such time as the water rights for the development of potash mining are granted.</p> <p><u>Response:</u> See response to water right comment (SUWA comment #11) above. In addition, even if the State Engineer grants the water rights, Emerald Peak would not be able to develop those water rights for their stated beneficial use at the stated places of use until and only if: (1) the leasing EA is complete; (2) Emerald Peak successfully obtains the leases; (3) Emerald Peak submits a development plan and complies with all the required stipulations; and (4) additional NEPA analysis is conducted on the development plan. Further, the BLM does not dictate the timing or the outcome of the water rights application process; when and whether the water rights are granted is completely up to the Utah State Engineer.</p>	No EA change required..
54	Audubon	<p>BLM could allow temporary access permits to allow for research. This analysis should be done by the applicant/lessee as part of the process of obtaining the water rights prior to leasing.</p> <p><u>Response:</u> BLM must complete this leasing EA prior to offering leases in order to not favor one particular applicant. Therefore, much of the analysis requested by Audubon would likely be completed after this process is complete and when BLM has leases in place. BLM is not opposed to ground water research, but as of yet has not received any proposals for research. If any such proposals were made, BLM would consider them. However, it seems highly unlikely that a private entity would invest in and undertake hydrologic studies of the extent required by Stipulation No.13 without some assurance that</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		they could eventually obtain a lease. Currently, no entity has such an assurance, nor can any assurance be given until this EA process is completed, the leases are actually offered and there is a successful outcome for a particular bidder.	
55	Audubon	<p>42 K afy is insufficient for the potash mining purposes contemplated in preferred Alternative A - Emerald Minerals has filed for 421,000 afy in water rights, and the projected consumptive water usage of 120,000 afy. It is hard to believe that using (evaporating) this amount of water – if it exists – can be considered by BLM to be insignificant.</p> <p><u>Response:</u> BLM has not received and cannot accept an application from an individual leasee at this point. When a plan of operations is received after a lease has been offered, then these specific analyses can be performed. Please see response to Audubon Comment #51, above.</p>	No EA change required.
55a	Audubon	<p>The EA does not make clear how conflicts with BLM water rights can be avoided or mitigated.</p> <p><u>Response:</u> At this time, this subject cannot be addressed to any further degree than the EA addresses it. It would be addressed in a development-specific NEPA analysis once the requirements of Stipulation #13 are met. Also, see response to SUWA comment #11. Further, Stipulation #8 would require water replacement under the circumstances given in the EA</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		and this stipulation could apply to the existing BLM water rights as well as other non-BLM managed waters.	
56	Audubon	<p>We believe the EA is extremely faulty in this area. The EA says that air quality may be improved due to the preferred alternative. Under the section of the No-Action Alternative on Page 69 the Environmental Assessment states, "Air Quality has the potential to be improved by the implementation of leasing and development, once the ponds are in place to limit available wind-borne dust.</p> <p>The EA says that air quality is an issue now, but that it may get better with the project. We believe it could get much worse at the conclusion of the project.</p> <p><u>Response:</u> BLM believes that more water on the playa would result in less dust. For reclamation, the pond floors will contain a salt crust which can be left for dust control just like the existing salt crust surface limits wind-borne dust. Please see response to Comments #6 and #29-32.</p>	No EA change required.
57	Audubon	<p>On Page 26 of the Environmental Assessment states, "An alternative to lease 65,000 acres was proposed but eliminated from analysis as it would not provide a large enough area to economically develop and provide maximum recovery of the resource under currently-known technologies." However, no documentation was provided to demonstrate this conclusion. Given the negative consequences of the proposed mineral operation, we request that a full fact-based discussion of this alternative be provided, if you do not decide to withdraw the leasing proposal or decide upon the no-action alternative and if you move forward with further action such as a full Environmental Impact Statement.</p> <p><u>Response:</u> As is stated in the EA on page 26, "An alternative to lease 65,000 acres was proposed but eliminated from analysis as it could not provide a large enough area to economically develop and provide maximum recovery of the resource under currently-known</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		technologies. See response to Comment #5.	
58	Audubon	<p>While we think that the lease proposal should be withdrawn or that the no action alternative is preferred, we also think it is important to point out that Alternative C should have been the preferred alternative for BLM.</p> <p><u>Response:</u> No preferred alternative was identified in the EA. Alternative C will be considered when the Authorized Officer reviews the EA, and prepares a Decision Record.</p>	No EA change required.
59	Audubon	<p>The analysis of socio-economic impacts should be extended to include potential impacts on Garrison, Eskdale and Baker, NV.</p> <p><u>Response:</u> These impacts may apply to a lesser extent. (Approx 50 miles to Eskdale and Garrison). The greater the area and population analyzed the more diluted the impacts become throughout the area of analysis. Consequently the more conservative approach is to confine the analysis to the nearest (and likely the most impacted) areas, then expand the area if the initial analysis indicates that the impacts will reach farther. Eskdale and Garrison were analyzed, to a limited extent, as part of Millard County; data for those unincorporated areas is very limited. To include Baker, Nevada would require an expansion of the analysis that is unwarranted by the results of the analysis at the scale in the EA, particularly given the speculative nature of the scenario analyzed. Socio-economic impacts will be reviewed under the NEPA document prepared for a detailed operations plan.</p>	No EA change required.
60	Audubon	<p>The EA fails to examine project impacts as they may (or may not) affect the cosmic ray collection project near the northern edges of the lakebed, other current or planned minerals mining operations in the area, potential wind power development, and the proposed Southern Nevada Water Authority and Central Iron County Water Conservancy District interbasin groundwater transfers.</p> <p><u>Response:</u> With exception of the Telescopic Array project (Univ. of Utah) project, these entities have not expressed interest in this</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		project. In response to the concerns expressed by the Telescopic Array project stipulations have been added to limit dust and potential light pollution. The Milford Wind project is included in the cumulative effects analysis. Groundwater rights are administered by the State Engineers' offices of the respective states, but would be considered during the approval process for any specific mine plan.	
61	USFWS	<p>We recommend development scenarios analyzed in future NEPA documents consider the potential habitat values of Sevier Lake in the presence of water, and we recommend that development plans allow for the formation and maintenance of habitat for migratory birds.</p> <p><u>Response:</u> BLM agrees. These considerations would be included during the production phase and associated NEPA analysis.</p>	No EA change required.
62	USFWS	<p>We recommend that BLM select Alt C.</p> <p><u>Response:</u> See response to Comment #58.</p>	No EA change required.
63	USFWS	<p>Alternative A would result in a groundwater deficit and would further degrade existing migratory bird habitat.</p> <p><u>Response:</u> Lease Stipulations No. 13 and No. 8 requires gathering of hydrologic information, monitoring and a mitigation plan for ground water losses. Stipulation No. 9 requires gathering of baseline information on wildlife and vegetation in order to address potential impacts to migratory bird habitat under the NEPA document for a specific operation plan. Also see responses to Comments #47 and #51-52.</p>	No EA change required.
64	USFWS	<p>Alt C is preferable for several reasons, and might also increase flexibility to implement the below recommendations to minimize impacts to wildlife.</p> <p><u>Response:</u> See responses to Comments #58 and #65.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
65	USFWS	<p>USFWS Recommendations.</p> <ol style="list-style-type: none"> 1) Enhance/restore habitat on north end of Sevier River and north end of Sevier Lake. 2) Mining Facilities avoid river delta. 3) Mine facilities should be designed so river water can flow across portions of Sevier Lake to create migratory bird habitat. 4) Allow water to overtop berms and dikes and allow lake to flood instead of raising dikes and berms. <p><u>Response:</u> These recommendations may be appropriate in addressing any operation plan submitted in relation to the leases proposed to be offered . They are not appropriate to include as lease stipulations or requirements.</p>	No EA change required.
66	USFWS	<p>We support the stipulation requiring plant and wildlife surveys prior to any surface disturbing activities. These surveys should include assessments of habitat quality and the invertebrate community.</p> <p><u>Response:</u> BLM appreciates this comment.</p>	No EA change required.
67	USFWS	<p>We recommend the BLM keep the reporting requirements throughout the life of the project rather than at the discretion of the Authorized Official, particularly for birds protected under the Migratory Bird Treaty Act.</p> <p><u>Response:</u> The BLM Authorized Officer will not make any decisions on waiving monitoring and reporting requirements, only after careful consideration, such consideration will include coordination with without first consulting with the US Fish and Wildlife Service if appropriate.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
68	USFWS	<p>We support BLM's stipulation that the lessee develop a plan to analyze ground and surface water interactions and to monitor impacts to groundwater resources on and adjacent to the project area.</p> <p><u>Response:</u> BLM appreciates this comment.</p>	No EA change required..
69	USFWS	<p>We recommend the BLM work with the lessee to evaluate development options that would create some beneficial habitat for migratory birds within the evaporation ponds and also in adjacent areas.</p> <p><u>Response:</u> We agree, it is the intent of the BLM to avoid and minimize impacts and to offset any losses through mitigation, if there is an opportunity.</p>	No EA change required.
70	USFWS	<p>The impacts of groundwater pumping could extend beyond Sevier Lake and affect migratory bird habitat far from the lake and impact springs, wetlands, fish and mollusks. The groundwater below Sevier Lake might be connected to the carbonate aquifer that spans western Utah and eastern Nevada (EA, p. 51). If the aquifers are hydraulically connected, large groundwater withdrawals like the one proposed under the preferred alternative could dry up wetlands or reduce flows out of springs and seeps and could even affect areas as far away as Fish Springs National Wildlife Refuge. In contrast to the BLM preferred alternative, alternative C will only remove 15,000 acre-feet of brines annually, which is less than the estimated 31,000 acre-feet of annual groundwater recharge. Selecting alternative C would reduce the risk of dewatering wetlands, springs and seeps and allow greater flexibility in modifying mining plans should groundwater depletions begin impacting sensitive habitats. Even with this alternative, we recommend that a monitoring and mitigation plan be developed and implemented to ensure that the withdrawals do not adversely impact important water resources and wildlife habitats.</p> <p><u>Response:</u> Stipulation No. 13 requires hydrologic analysis to ensure that there are no impacts. When the mining plan is prepared which would include ground water analyses, all surrounding wetland areas would be considered within a close proximity. Not all the hydrological variables are known at this time but all that is known has been identified in this EA. Site specific plans would be analyzed during the review of the mining plan (plan of operations). Monitoring would be throughout the life of the operation. Stipulation # 8 requires replacement of water to any source identified by the BLM during the mining plan approval process. Please also see responses to</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		Audubon Comments #48a through #55a.	
71	EPA	<p>Sevier Dry lakebed has been identified as a significant source of windblown dust contributing to PM₁₀ exceedances in the Provo, Salt Lake City, and Ogden urban areas. The NEPA analysis should include a strategy to minimize emissions after mining production is completed to assist in avoiding such PM₁₀ exceedances.</p> <p><u>Response:</u> This will be explored during the analysis of the mining plan and site specific lease stipulations. Please see the responses to Comments #6, #29, and #34.</p>	No EA change required.
72	EPA	<p>Other alternatives leading to wind erosion reductions after the project is completed should also be considered as critical mitigation.</p> <p><u>Response:</u> Potential mitigation for wind-blown dust and erosion following project closure may be explored during the NEPA process for mining plan approval. Please see the responses to Comments #6, #29, and #34.</p>	No EA change required.
73	EPA	<p>The BLM should disclose the Dust Control Plan for review.</p> <p><u>Response:</u> A detailed dust control plan will be required as per a lease stipulation prior to surface disturbing activities (See Stipulation # 15) and available for review during the approval process for mining plan approval.</p>	Stipulation 15 added
74	EPA	<p>Emission source may be transferred to the agricultural fields that will possibly be left fallow due to the transfer and/or diversion of irrigation water from agricultural to mineral extraction use as mentioned on page 58.</p> <p><u>Response:</u> After a mining plan was received, then this type of analysis would be possible and could occur.</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
75	EPA	<p>EPA recommends the NAAQS Table on page 29 be updated to reflect current standards.</p> <p>Please make the following changes:</p> <ul style="list-style-type: none"> • The 1-hour NAAQS ozone standard of 0.12 ppm is no longer in effect, and the 8-hour standard was revised from 0.08 ppm to 0.075 ppm on March 27, 2008 (FR, effective May 27, 2008). • The lead standard was revised from 1.5 ug/m³ to 0.15 ug/m³, effective January 12, 2009. • The NAAQS for NO₂ was modified on February 9, 2010 (FR), effective April 12, 2010 to add a new 1-hour standard of 100 ppb, 1-hour average. • The NAAQS for SO₂ was modified on June 22, 2010 (FR), effective Aug. 23, 2010 to add a new 1-hour NAAQS of 75 ppb and revoking the 24-hour and annual standards shown in the table; the 3-hour average secondary NAAQS was not modified. <p><u>Response:</u> BLM agrees and has made these changes in the EA NAAQS Table 3-1.</p>	EA Changes made, Table 3-1.
76	EPA	<p>The NEPA analysis should include a map illustrating where wetlands occur on the site, summary of the acreage and condition of all wetlands and riparian sites within the project area to outline baseline conditions to be monitored throughout the life mining operations.</p> <p><u>Response:</u> The EA references Map 3 of the Resource Management Plan for riparian areas. In addition, the BLM is requiring Stipulation No. 16 which makes the operator responsible to provide a full inventory of wetlands and riparian areas prior to surface disturbing activities. This will provide the baseline information that will be necessary to assess impacts under the NEPA document for a</p>	Stipulation 16 concerning Riparian and Wetlands added

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		detailed operations plan.	
77	EPA	<p>Due to the importance of analyzing this (water quality) data to adequately evaluate potential impacts, it is essential that this information be fully vetted and available for public review during the NEPA process prior to the development of lease parcels.</p> <p><u>Response:</u> BLM agrees that this should happen during the NEPA process prior to development. Stipulation No. 13 requires hydrological analysis and items such as ground water analysis should be very useful in helping to adequately evaluate potential impacts.</p>	No EA change required.
78	EPA	<p>References of best management practices and project design that are mentioned throughout the EA and in intended to minimize impacts to water quality, wetlands, and/or riparian areas should be fully disclosed rather than broadly discussed during the NEPA process in order for reviewers to accurately assess potential environmental impacts of the project.</p> <p><u>Response:</u> This information is the best BLM can disclose at this point. After a mining plan is received during the development phase, more information would be available for disclosure. Please see Section 2.2.2 of the EA, which states: "It is expected that Best Management Practices ... would be included in the proposed development plans and implemented for facility construction and operations on and off-lease to minimize the potential for related resource impacts." And also note that many of the required permits and approvals listed in Table 1-1 and that would be required of a</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>developer would entail various types of structural and non-structural BMPs. Last, note that the EA stipulations 3, 5, 6, 7, among others would also require more development of specific BMPs.</p>	
79	EPA	<p>Without specific information on project design details or cultural inventory determinations, it is difficult to determine at this time, the potential impacts to cultural resources this project may entail or evaluate specific mitigation opportunities. EPA recommends disclosing as much detail as possible within subsequent NEPA documentation.</p> <p><u>Response:</u> Specific lease development proposals will require Class III cultural resource inventory, Section 106 compliance, and NEPA compliance. Impacts to cultural resources identified in those proposals would be identified and evaluated at that time. See response to Comment #14.</p>	No EA change required.
80	SUWA Form Letter (email)	<p>SUWA Form Letter:</p> <p>Please Do Not Lease Sevier Lake for Potash Development</p> <p>Dear [Decision Maker],</p> <p>I ask that the Bureau of Land Management (BLM) use its discretion and not offer any parcels for potash leasing in the Sevier Lake area (the no action alternative in the Sevier Lake Competitive Potash Leasing Proposal).</p> <p>The environmental assessment does not fully account for the impacts to shorebirds that depend on this area. Furthermore, it does not consider the impacts to the air quality and snowpack of the Wasatch Front from ground disturbance. This beautiful, sensitive area is not appropriate for potash development.</p> <p>Sincerely, [Your [Your [City, State ZIP]</p> <p style="text-align: right;">Name] Address]</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p><u>Response:</u> There were 367 e-mails submitted using this format. Of these, 35 e-mails had additional substantive comments these were the same or similar to comments that have been addressed</p> <p>In response to the public comment on impacts to air quality and snowpack of the Wasatch Front, The BLM feels that the ground disturbance associated with this project will not create additional significant impacts to air quality or regional dust production which might impact snowpack at the Wasatch Front. Impacts to the snowpack at the Wasatch Front from the implementation of a mining plan are unlikely. Please see responses to Comments #6, #29, and #34.</p>	
81	Utah Clean Air Alliance	<p>There is a large degree of uncertainty regarding the availability of water resources in the EA. That the EA was produced with the expenditure of time and financial resources within the BLM without knowing whether the leasing was even feasible vis-à-vis uncertainty regarding water resources is a concern. One can assume without the necessary water there will be no lease sales. It appears financially imprudent to have spent resources when there could be no sales.</p> <p><u>Response:</u> The BLM analyzes the offering of solid mineral lease parcels only after one or more parties submit Expression of Interest forms. Companies or individuals submit an Expression of Interest only if they are intent on buying or bidding on solid mineral lease parcels. Once an Expression of Interest has been received, the BLM cannot show favoritism to any one party that has submitted an Expression of Interest by delaying lease offerings until that party has an approved water right from the Utah State Engineer. Once a lessee (of leased solid mineral parcels) submits a Plan of Operations or Mining Plan, the BLM would prepare a separate NEPA document.</p>	No EA change required.
82	Utah Clean Air Alliance	We recommend that BLM explores with the Utah State Engineer whether or not water would be available before expending any resources in this process, and poll owners of water rights in the area to see if there is some willingness to sell or lease those rights.	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p><u>Response:</u> Please see response to the above comment #81. In addition, the BLM does not have any mechanism by which it could solicit water-right holders to determine if they were interested in selling/leasing their water rights to a third party (such as a lessee). Further, any such sales or leases would involve changes to points of diversion, nature of uses, and places of use; as such, the State Engineer would have approval authority. Any approvals would be made on a case-by-case basis by the State Engineer, and blanket assumptions by BLM about water right sales or leases are not appropriate or meaningful. That being said, BLM is already aware of farmers in the Delta area that would be interested in selling their water rights. So there is at least some suggestion that some water may be available to support a future potash proposal.</p>	
83	Utah Clean Air Alliance	<p>“First, the Proposed Action assumes a need for seven wells that could provide a combined volume of 900 acre-feet per year of fresh water. Given constraints on new appropriations in this area (UDWRi 2010) and what may be limited opportunities to purchase an existing water right in close enough proximity to pursue a reasonable change in place-of-use approval, it is not known where sufficient supplies will come from and ultimately this quantity of water may not be available. However, if the water can be obtained, the process would result in a loss of that quantity of fresh water from the current water balance in the area.”</p> <p><u>Response:</u></p> <p>BLM is also concerned about the effect of additional water withdrawals on existing water rights/resources. The EA provides for this stipulation:</p> <p>Water Replacement: The Lessee at his expense will be responsible to replace any water resources that are lost or adversely affected (quality or quantity) by their mining operations. These shall include (1) developed ground water sources existing at lease issuance or new sources that may be developed during the term of the lease, and (2) other surface and/or ground water sources that may be identified by the BLM for protection as part of the conditions for any mining plan approvals. If replacement is required, the lessee shall replace</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		<p>the sources with an alternate source in the same quantity and quality to maintain existing uses. The existing uses shall include but not limited to riparian habitat, fishery habitat, livestock, wildlife, domestic, agricultural, or other land uses. The lessee/operator shall obtain sufficient base line data and monitoring in order to establish parameters to show whether water resources are affected.</p> <p>Several new water rights applications have recently been filed with the Utah Division of Water Resources in relation to the proposed action. BLM has filed official protests to these applications because BLM would like to insure further investigation of potential impacts to nearby BLM water rights as well as the fact that BLM is required to conduct a competitive lease sale for this type of mineral lease and because BLM has not yet conducted such a competitive sale, there can be no assurance at this point that Emerald Peak Minerals will secure the leases in such sale when and if it takes place.</p>	
84	Utah Clean Air Alliance	<p>Request discussion in the EA on the following: A statement of the hydrology of the Lakebed, the aquifers into which the lake discharges, the interconnectivity of those aquifers with the larger flow systems.</p> <p><u>Response:</u> The EA described what is currently known about the hydrology of the lakebed by summarizing available published literature. There is no other known readily available information that would contradict what was stated or that would elaborate upon it in any relevant way. As the EA states, Stipulation No. 13 requires a project proponent to do a hydrological analysis that will provide more detail than what is in the leasing EA. This information would be disclosed and used in a future project-specific NEPA evaluation.</p>	No EA change required.
85	Utah Clean Air Alliance	<p>Request discussion in the EA on the following: A baseline of water resources in the flow system where any/all wells are proposed.</p> <p><u>Response:</u> Please see the response to Comment #84, above. Also, regarding current water rights, the EA described those that could be assumed to be “in the flow system”. At this level of the process, it is not possible to fully define the extent of the flow system, nor is it possible to estimate impacts to a specific water right holder. Further, please see EA stipulation No. 8, which deals with replacement of water and the statement in Section 4.2.1.7, which says “...it would be the responsibility of the State Engineer to ensure that other existing</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		water rights would not be harmed by granting any related water rights approvals.”	
86	Utah Clean Air Alliance	<p>Request discussion in the EA on the following: A baseline inventory of aquatic and terrestrial wildlife that relies on the flow system.</p> <p><u>Response:</u> A common requirement to all action alternatives (Section 2.2.2, lease stipulation No. 9) is that the lessee shall submit an acceptable wildlife and plant inventories prior to conducting any surface disturbing activity. The inventory plan shall address, but is not limited to, the following: species occurrence, migration corridors, winter use, reproductive periods, and habitat value, including the invertebrate community.</p>	No EA change required.
87	Utah Clean Air Alliance	<p>Because of the stated uncertainties in the discussion of the impact of mining on the lakebed as it relates to water and air pollutants from mining operations the following needs expansion:</p> <ol style="list-style-type: none"> a. An estimate of 6 criteria and all HAPs air and water pollutants contributed by mining operations. b. An estimate of mobilized mercury, radiation, and other toxics in current dust from wind events on and near the lakebed. c. A statement of wind patterns from the lakebed and surrounding areas noting the direction and extent of travel. <p><u>Response:</u> A statement of wind patterns has been added to Section 3.2 of the EA. There is no stated uncertainty on the impact of air pollutants due to this project. Air quality impacts are unlikely to be significant, and may actually result in lower fugitive dust emissions over the life of the project due to covering the dry lake bed surface with liquid during this time. BLM is not required under NEPA to conduct research on air toxics associated with current dust emissions on or near the lakebed. Since the proposed project will not significantly increase these emissions, further analysis along these</p>	No EA change required.

Com- ment #	Commenter	Comment/Response	Integration Status (EA addition/ correction)
		lines is neither warranted nor required. See responses to comments 6, 29, and 34.	
88	Utah Clean Air Alliance	<p>Alternative C is the less damaging and more cautious approach to the leasing. Also C allows the project(s) to test assumptions about potential damages, damages which may be irreparable especially regarding consumptive use of water and the effects on interconnected aquifers.</p> <p><u>Response:</u> See response to Comment #58.</p>	No EA change required.
89	Utah Clean Air Alliance	<p>Given the stated uncertainties and lack of studies on water and other resources, the project calls for a full EIS.</p> <p><u>Response:</u> See responses to Comments #5 and #9.</p> <p>The values in the EA for mining are professional estimates at this point in time and the inputs into the hydrologic system are the best information that is available. As more information becomes available BLM will disclose it by the fact that 43 CFR 3590.2 (a) requires BLM to ensure that proper environmental analysis is accomplished prior to approval of a mining (operating) plan. Since this is a competitive leasing action it is impossible to foresee who will succeed in the bidding and obtain the lease. Specific mining plans cannot be analyzed because there are a number of ways to mine this resource based on economics and other factors. During the mining plan approval process, the lessee/operator can be further constrained by conditions of approval that can be placed on the lease through this process.</p>	No EA change required.
90	Cosmic Ray Group, University of Utah	<p>Lake bed mining operation could increase the amount of fugitive dust</p> <p><u>Response:</u> The BLM is aware of the dust situation created by the dry Sevier Lake bed. The EA discusses the issue in Section 3.3 and 4.2.3. The BLM feels the construction of facilities would not create a lot more dust than is already being put into the atmosphere. The BLM is requiring a Dust Control Plan (Stipulation No. 15) as part of the stipulations to help minimize the dust issues. By covering the</p>	No EA change required.

Comment #	Commenter	Comment/Response	Integration Status (EA addition/correction)
		surface of the dry lake bed with ponds there should be a decrease in the amount of dust. At the end of the operation the pond floors will be layered with salt and will provide less exposed area for wind erosion. See also responses to Comments #29 and #30.	
91	Cosmic Ray Group, University of Utah	<p>Light pollution is a concern, if mining for fertilizer will be a 24-hour operation.</p> <p><u>Response:</u> This will have to be reviewed when there is a specific project proposed in a detailed mining plan. The Occupational Safety and Health Administration (OSHA) places minimum requirements on the amount of lighting necessary for the type of work that is being accomplished. These are safety standards for the protection of personnel that are working. Stipulation No. 17, Lighting, has been added to the EA to address the issue of potential light pollution.</p>	Stipulation No. 17 added to EA
92	Utah Clean Air Alliance	<p>Nomination of the Sevier Dry Lake bed as an Area of Environmental Concern (ACEC)</p> <p><u>Response:</u> The Utah Clean Air Alliance has submitted an ACEC nomination for the Sevier Lake area. The nomination includes a map of the nominated area but no rationale for a designation, or description of the relevant and important values which may be present. ACEC nominations may only be considered through a land use planning process. Since no plan amendment is proposed, consideration of the nomination is beyond the scope of this EA. The mere presence of an ACEC nomination unsupported by any rationale is not relevant to BLM's decision regarding the leasing of potash on the Sevier Dry Lake Bed.</p>	No EA change required.

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