Great Salt Lake Minerals Corporation's Solar Evaporation Pond Expansion Project Environmental Impact Statement

SCOPING REPORT

Final Scoping Report: October 2009

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1.0 INTRODUCTION

As described in its Public Notice of May 26, 2009, the U.S. Army Corps of Engineers, Sacramento District (Corps), is evaluating a Section 404 permit application to allow expansion of Great Salt Lake Minerals Corporation's (GSLM's) solar evaporation ponds and facilities. In accordance with the National Environmental Policy Act (NEPA), the Corps will prepare an Environmental Impact Statement (EIS) for the Proposed Action. The Corps originally began evaluating the permit application after publishing a Public Notice on October 25, 2007, but published a second Public Notice in May of 2009 to solicit comments on an expanded proposal to construct evaporation ponds and expand production.

The overall project purpose is to increase production/output of organically certified potassium sulfate to help meet the increasing demand for this type of fertilizer. The proposed expansion would add approximately 91,000 acres of solar evaporative ponds, impacting approximately 80,000 acres of waters of the United States, including wetlands, and reducing GSLM's need to import potassium from other sources. The expansion would also include deepening the existing Behrens Trench and enclosing it within a high pressure pipe; and purchasing raw potassium salts from U.S. Magnesium Corporation and hauling them to GSLM's processing facilities in Ogden, Utah until a new sulfate of potash (SOP) processing plant could be constructed within the footprint of U.S. Magnesium's evaporation pond complex. The DEIS will address impacts, including but not limited to, wildlife habitat, water quality, Great Salt Lake water elevations, wetlands, hydrology, cultural resources, transportation, endangered species, and industry.

2.0 SCOPING PROCESS

Based on guidance from NEPA, significant issues were identified that should be addressed in the DEIS. An "issue" is a point of discussion, debate, or dispute about environmental effects, or about aspects of the project that could cause environmental effects. National Environmental Policy Act regulations require that lead agencies determine "the significant issues to be analyzed in depth in the environmental impact statement" and "identify and eliminate from detailed study the issues that are not significant" (40 CFR 1501.7). The process of identifying significant issues is called "scoping." The purpose of scoping is to focus the detailed environmental review on those issues that are relevant to the proposal and decision to be made. Significant issues are those with environmental effects that warrant resolution either through development of alternatives that reduce effects while achieving the Proposed Action's purpose and need, or through application of mitigation measures, or both.

As part of the Corps' 404 permitting process, three pre-application interagency meetings were held to provide information and identify issues and concerns. The first meeting was with an Interagency Team consisting of representatives of Corps; U.S. Fish and Wildlife Service (FWS); Utah Division of Wildlife Resources (DWR); Utah Division of Forestry, Fire and State Lands (FFSL); Utah Geologic Survey (UGS); and U.S. Geologic Survey (USGS). Subsequent issues were derived in a second meeting with an

Environmental Protection Agency (EPA) representative. Finally, a preliminary meeting was held with representatives from groups with interest in the Great Salt Lake.

Preliminary issues identified as part of this process related to water quality, wildlife habitat, heavy metals, nutrient loading, fresh water exchange, changes in salinity, brine shrimp habitat, and economic issues. Additionally, potential avian impacts were identified to waterfowl, shorebirds, and raptors including the American white pelican, snowy plover, Canada goose, and others. These preliminary issues were identified in the Notice of Intent (NOI), which announced the formal scoping process and invited public comment.

To identify additional issues, the Corps solicited scoping comments from the following: the public; Federal, State, and local agencies and officials; Indian tribes; and other interested parties. Comments were solicited through the aforementioned Public Notice and NOI, and through purchased newspaper advertisements. Comments could be submitted to the Corps by mail, email, or by providing written or oral comments at one of seven scheduled public meetings in Utah. During the first round of public meetings in 2007, the first public meeting was November 7, 2007, in Bountiful, the second on November 8, 2007, in Ogden, and the third on November 14, 2007, in Salt Lake City. The deadline for submitting comments announced in the Public Notice and NOI was December 3, 2007, but it was later extended until December 17, 2007. Advertisements for the public meetings were published in the Ogden *Standard-Examiner*, the *Salt Lake Tribune*, and the *Deseret News*. A feature on the Project also ran in the *Salt Lake Tribune* on November 6, 2007, which included an announcement for the meetings.

On May 26, 2009, the Corps published a new public notice for an amended permit application for GSLM, which included an additional solar evaporation pond area on the north arm of Great Salt Lake, improvements to the Behrens Trench, and construction of a new SOP plant near U.S. Magnesium Corporation's facilities. This amended permit application required a new public scoping period. During this new scoping period the first public meeting was June 4, 2009, in Bountiful, the second on June 9, 2009 in Ogden, the third on June 11, 2009, in Salt Lake City, and the fourth was on June 24, 2009, in Salt Lake City. The deadline for submitting comments announced in the Public Notice and NOI was July 9, 2009. Advertisements for the public meetings were published in the Ogden *Standard-Examiner*, the *Salt Lake Tribune*, and the *Deseret News*.

Attendance at the first round of public meetings totaled 88 individuals. This included 14 individuals representing Federal or State agencies and 74 members of the public (including organizational representatives). Attendance at the second round of public meetings totaled 168 individuals. This included 8 individuals representing Federal or State agencies and 160 members of the public (including organizational representatives).

By the first comment deadline of December 17, 2007 the Corps had received a total of 77 comments. This total included five formal comments from agencies. Agencies submitting comments were the U.S. Bureau of Land Management; EPA; FWS; Utah Division of Oil, Gas, and Mining; and the DWR.

The other 72 comments came from private organizations and individuals. Of these 72 comments, 9 were oral comments taken by a court reporter present at each of the three public meetings, 11 were written comments submitted to the Corps at one of the meetings, and 52 were written letters and email comments sent to the Corps following the public meetings.

By the second comment deadline of July 9, 2009 the Corps had received a total of 1,426 additional comments. This total included three formal comments from agencies. Agencies submitting comments were the FWS, EPA, and the Utah Resource Development Coordinating Committee (RDCC). A formal comment was also received from the Navajo Nation.

The other 1,422 comments came from private organizations and individuals. Of these 1,422 comments, 7 were oral comments taken by a court reporter who was present at each of the four public meetings, 1,356 were written comments submitted to the Corps at the meetings, and 59 were written letters and email comments sent to the Corps following the public meetings. 1,274 of the letters were form letters containing identical text. These form letters were on pre-printed postcards and sent by supporters of GSLM and the Proposed Action. Copies of the scoping letters received during the first scoping period are available in Appendices C and D of this report. Copies of the letters received during the second scoping period are available in Appendices E and F.

The issues derived from scoping are organized by resource area and summarized below in Section 3.0: Issues Derived from Scoping. Each issue is followed by a numeric code indicating the letter and comment numbers that the issue is identified with (e.g., "A2.18" indicates the issue came from agency letter # 2, comment # 18).

Many of the issues identified in the second round of scoping had already been identified during the first round. Issues identified during the first round of scoping are printed in black text. Issues identified during the second round of scoping are printed in blue text. The letter and comment numbers from the first round of scoping are also printed in black text, and those from the second round are printed in blue text.

3.0 ISSUES DERIVED FROM SCOPING

This section summarizes issues identified in all of the comments received during the scoping process and the analysis methods that were adopted to address each issue. The purpose of this process is to determine the scope of the EIS so that preparation of the document can be effectively managed. Scoping is intended to ensure that problems are identified early and properly studied, that irrelevant issues do not consume time and effort, that the draft EIS is thorough and balanced, and that delays occasioned by an inadequate draft EIS are avoided. The scoping process should identify the public and agency concerns; clearly define the environmental issues and alternatives to be examined in the EIS including the elimination of irrelevant issues.

The Corps considered every comment received during the scoping process. Comments are referenced in the appendices to this report:

- Appendix A contains **preliminary issues** identified in meetings with agencies and stakeholders and issues identified by interdisciplinary resource specialists.

- Appendix B contains a copy of the official public notice for the comment period, public meeting announcements, meeting sign-in sheets, and public meeting handouts.

- Appendix C contains numbered **agency comments** received during the first EIS scoping comment period.

- Appendix D contains numbered **public comments** received during the first EIS scoping period.

- Appendix E contains numbered **agency comments** received during the second EIS scoping period.

- Appendix F contains numbered **public comments** received during the second EIS scoping period.

After the issues were summarized from the comments during the first scoping period, a draft copy of the original scoping report (dated Feb. 8, 2008) was provided to participating agencies (agency meeting, Feb. 20, 2008) and to representatives of stakeholder interest groups (stakeholders meeting, Mar. 26, 2008). Subsequently, the issues were summarized, and conclusions were drafted for each issue. The conclusions addressed: issue relevance, criteria for determining level of impact, and methods of analysis for addressing the issue.

Relevant issues are defined as those directly or indirectly caused by implementing the Proposed Action or its alternatives. An issue was considered not relevant if:

- The issue was outside the scope of the proposed action or its potential alternatives;

- The issue was conjectural and could not be supported by scientific evidence or rational evaluation;

- The issue has already been decided by law, regulation, or higher-level decision;

- The issue was irrelevant to the decision to be made.

Draft issue conclusions were sent to interagency representatives by email and were discussed at the next interagency team meeting (Mar. 27, 2008). Revisions were made to the issues based on agency comments. Additional agency comments on issue relevance were solicited at a later interagency team meeting (June 5, 2008) prior to finalizing the original scoping report.

3.1 Geologic Hazards

3.1.1 Seismic Activity

Issue: Could seismic activity cause petroleum-product spills into the lake from pumping facilities, pipelines, and supply trucks? Spills might result from 1) ground-shaking or 2) tsunami waves generated by sublacustrine fault ruptures. **(Public Comments-48.14, 31)** **(141.51, 98)**

Issue conclusions:

1. Relevance. These issues are relevant as the possibility exists for additional storage and use of petroleum products near the shore or on the dikes during construction and operation of facilities associated with the Proposed Action and its alternatives. Seismic activity could then potentially result in the discharge of petroleum products into the lake. Impacts from oil spills caused by tsunami waves are speculative, but there is historic information that waves were generated by past seismic activity.
2. Criteria for Determining Level of Impact. Compliance with the 40 CFR 112 (Oil Spill Prevention regulations) and Utah Pollutant Discharge Elimination Systems (Storm Water Pollution Prevention Plans) and similar regulations will be evaluated.
3. Methods of Analysis for Assessing Issue. Evaluate compliance with the regulations associated with petroleum storage. If there is compliance with the regulations the potential for secondary impacts can be evaluated if impacts are likely to occur or not.

3.1.2 Lake Effect

Issue: Could increased evaporation from Great Salt Lake alter the "lake effect" responsible for much precipitation, particularly snowfall, along the Wasatch Front? **(Public Comments-7.04; 12.05; 48.17)**

- Would the Proposed Action affect the lake effect and impact local ski resorts? **(80.04; 115.01; 134.02; 141.33)**

Issue conclusions:

1. Relevance. This issue was determined to be not relevant as the likelihood of altering this effect from the proposed expansions is considered negligible. Existing knowledge indicates that evaporation is not one of the factors that cause "lake effect" storms. Of the known factors that do cause lake effect, the acreages involved in the proposed solar ponds are not considered consequential. This was determined based on personal communication with W. James Steenburgh, University of Utah, Department of Meteorology and from technical papers on the subject (Steenburgh 2008 pers. comm.; Steenburgh et al. 2000; Halvorson 1999).

2. Criteria. Would there be a scientifically predictable and measurable short or long term impact (increase or decrease) to the normal precipitation frequency, intensity, and total amount from the proposed project?

3. Methods. "Lake effect" will not be evaluated in the EIS as this was not determined to be a reasonably foreseeable impact of the Proposed Action and its alternatives.

3.1.3 Mining

Issue: What will happen to the dike system and residual salts when mining operation are completed? Specific concerns are as follows:

- Will dikes be removed at the end of mining? **(A2.10)**
- Will wave action remove the dikes when they are no longer maintained? **(A2.10)**
- If dikes remain after mining, will they prevent adequate mixing of lake waters? **(A2.10)**
- What will be the character of the residual salts in the evaporation ponds at the end of mining? Will this material be compatible with the water quality of the lake? **(A2.10)**
- Should the residual salts be removed, left in place, or covered at the end of mining? **(A2.10)**

Issue Conclusions:

1. Relevance. This issue is relevant and will be addressed in the EIS.
2. Criteria. All mitigation and reclamation efforts must be compliant with applicable mining reclamation statutes and regulations.
3. Methods.
   - The EIS will review applicable mining reclamation statutes and regulations to ensure that GSLM's reclamation efforts are compliant.

Issue: Approving the Proposed Action would set a dangerous precedent for more mining requests on Great Salt Lake. **(106.02)**

Issue Conclusions: This issue is not relevant and will not be examined in the EIS. The leasing process is controlled through the state leasing process (Utah Administrative Code § R652-20)

3.2 Air Quality/Climate Change

3.2.1 Air Quality

Issue: What are the potential impacts to air quality from the construction, full production, and operation of the solar evaporation ponds and the expanded processing plant? Specific concerns are listed below. **(Agency Comments-4.06; Public Comments-40.01; 52.10)**

- What would be the Proposed Action's effect on all criteria pollutants under the NAAQS and PDS increments, as well as on air quality-related values in any nearby Class I areas? In particular, what would be the impacts associated with PM10 and PM2.5, carbon monoxide, and ozone? **(4.02; 108.01; 127.07; A3.16; 141.32, 96)**
- Lowered lake levels will expose mudflats and increase fugitive dust, including harmful fine particles and toxic dust. **(84.02; 100.01; 103.01; 105.01; 122.03; 130.06; 141.24, 97; 144.44)**
- In order to comply with R307-205-5: Fugitive Dust, of the Utah Air Quality Rules, steps need to be taken to minimize fugitive dust during excavation and construction, such as watering and/or chemical stabilization, providing vegetative or synthetic cover or windbreaks. **(A2.15)**
- Impacts to visibility and the potential for regional haze from the project should be estimated. **(A3.17)**
- Depending on the scope of the proposed plant expansion and alternatives, a qualitative emission comparison approach may not be specific enough to adequately address and predict air quality impacts. **(A3.19)**

Issue conclusions:

1. Relevance. The issue is relevant based on potential conflict with the Clean Air Act as amended. The possibility exists for air quality in the form of fugitive dust, particulate matter, and/or chemical pollutants to increase as a result of the Proposed Action and its alternatives.
2. Criteria. Compliance with the Clean Air Act and the National Ambient Air Quality Standards.
3. Methods
   - The EIS will include an evaluation of existing data from the applicant and from the State of Utah. A literature and file search will be conducted that includes file searches for previous inventories and sites in the project area, which will include the area of the West Desert that may serve as an alternative site. This data will help

determine air constituents, proportions, and contribution to any past exceedences of National Ambient Air Quality standards.

- Existing data will be evaluated regarding the specific plans for expansion of the facility and possible implications on air quality. The evaluation will focus on possible exceedences of the NAAQS that may result from expansion of the Great Salt Lake Minerals facilities compared with the applicant's existing air discharge permit. It is anticipated that establishing a correlation between production and air discharge rates will provide the needed information.
- Information collected will be assessed in relation to the proposed project and alternatives, providing the Corps of Engineers with air quality data and information sufficient for decision-making. Assessment of air quality data will be conducted in coordination with the State of Utah.
- The likelihood of fugitive dust from exposed lakebed depends upon factors such as the physical characteristics of the soil/sediment, substrate moisture conditions, meteorological conditions, and substrate crusting issues. The areas of lakebed which are likely to be exposed if lake levels drop will be examined with these factors under consideration.

3.2.2 Climate Change

Issue: The EIS should include an analysis of project alternatives' carbon footprint and impact on global climate change. **(Agency Comments-5.18)** **(A1.22)**

Issue conclusions:

1. Relevance. The Ninth Circuit Court of Appeals recently declared, "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct." *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 508 F. 3d 508 (9th Cir. 2007). The proposed action and its alternatives have the potential to contribute increased amounts of greenhouse gasses to the atmosphere, thus the total carbon footprint of each of the project alternatives will be analyzed in addition to other greenhouse gas emission contributions.
2. Criteria. At the present time greenhouse gasses are not regulated as pollutants in the United States (see Held et al. 2007). If greenhouse gases were regulated, it would be possible in the DEIS to determine if GSLM were or were not in compliance with such regulations. The State of Utah or the federal government may, in the future, develop policies or regulations that provide incentives or requirements for industries like GSLM to reduce GHG emissions. Since GHG emissions are not regulated, the analysis will

examine the emissions differences between alternatives in terms of percentage increases in the project area. Then it will be determined whether those increases are small, moderate, or large.

3. Methods. The carbon footprint of the alternatives will be measures by calculating their greenhouse gas emissions.

3.3 Water Quality, Quantity, and Circulation

3.3.1 Water Quality Related to Dike Construction and Pond Operations

Issue: How would the Proposed Action affect water quality? Specific concerns are as follows:

- The EIS should use a water quality model to evaluate risk posed by the possible suspension/discharge of selenium and mercury into the aquatic environment during solar pond construction and operation. **(A3.05, 15)**
- What impact would a drop in lake levels have on the quality of adjacent surface waters? **(141.25)**
- Would dry evaporation reservoirs be a source of contamination for surface and ground water? **(141.36)**
- How would the Proposed Action impact Utah's narrative water quality standard? **(141.40; 144.18)**
- What are the short and long-term effects of the Proposed Action on the physical, chemical, and biological components of the aquatic environment? **(141.72; 144.38)**
- How would the Proposed Action impact the location, structure, and dynamics of aquatic communities; shoreline and substrate erosion and deposition rates; the deposition of suspended particulates; the rate and extent of mixing of dissolved and suspended components of the water body; and water stratification? **(141.78)**
- How would the Proposed Action impact changes in erosion or sedimentation rates, water temperature extremes, and nutrient and dissolved oxygen balance of the aquatic ecosystem? **(141.79)**
- Would the Proposed Action cause contamination of water/waterfowl that would be a threat to hunters who consume duck and geese meat? **(130.05)**

Issue Conclusions:

1. Relevance. These issues are relevant and will be examined in the EIS.
2. Criteria. The criteria used to evaluate water quality impacts are listed in sections 3.3.1.1, 3.3.1.2, 3.3.2, 3.3.3.4, 3.3.5, and 3.3.6.

3. Methods. The methods used to evaluate water quality impacts are listed in sections 3.3.1.1, 3.3.1.2, 3.3.2, 3.3.3.4, 3.3.5, and 3.3.6.

Issue: Water needs to be stored for farmers. **(13.01)**

Issue Conclusions: The Proposed Action and its alternatives is not related to water needs of agricultural activities. Thus, this issue is not relevant and will not be examined in the EIS. However, the EIS will examine the impacts that the Proposed Action and its alternatives may have on water levels in Great Salt Lake.

Issue: Analyze the impact of chemical fertilizers that farmers use leaching into waters. **(61.03)**

Issue Conclusions: This issue is not relevant and will not be examined in the EIS.

3.3.1.1 Dike construction

Issue: Would dike construction activities have direct and indirect impacts on water quality? **(Public Comments-48.57; 53.17-18) (4.02; 108.01; 141.26, 35, 37, 42, 46, 47, 58, 59, 76; 144.02, 17-20, 23-24, 35; A2.03; 10.05; 11.05; 71.01)**

Issue conclusions:

1. Relevance**.** This issue is relevant. Dike construction could disturb the lake bed. This short-term disturbance could release mercury or other metals that could be adsorbed to sediment particles. Other concerns would include discharges of sediment into the lake, use of materials that would leach pollutants into the water, and oils, grease, and other fluid spills from equipment.
2. Criteria. The level of impact dike construction will have on water quality will be based on the following:
   - Inclusion of appropriate Best Management Practices (BMPs) in construction design
   - Completing a Stormwater Pollution Prevention Plan (SWP3) for active construction phase
   - Reviewing the Spill Control Counter Measure Plan (SPCCP)
   - The levels of potentially toxic material including mercury in the sediment that would be dredged to form the dikes
3. Methods
   - Review of construction design
   - Compile and review existing data concerning past spills/regulatory compliance

- Review of the SWP3, with emphasis on correct installation and use of appropriate BMPs
- Determine risk/potential for spills
- Collect sediment samples from proposed expansion areas to be tested for mercury and/or other constituents

3.3.1.2 Operation of ponds and other infrastructure

Issue: Would day-to-day operations of dikes and other infrastructure, including existing and proposed pump stations, fuels, trucks and other vehicles, gravity flow trenches, causeways and other infrastructure impact water quality? **(Public Comments-26.04; 48.30, 45, 58)** **(4.02; 108.01; 141.26; 141.35, 37, 42, 50, 58, 59; 144.02, 17-20, 23-24, 35; A2.03; 10.05; 11.05; 71.01)**

Issue conclusions:

1. Relevance. This issue is relevant. Impacts from current pond operation are unknown; therefore it will be difficult to predict the impacts from expanded operations. If current operations have little or no impact to water quality, then it may be reasonable to estimate only small increases in impact from increasing daily operations.
2. Criteria. Specific criteria could include a change in water quality constituents between the pre- and post-1987 expansion if data are available. Other criteria would be if current operations have caused permit violations or are meeting environmental regulations.
3. Methods. Determine the impacts to water quality from current operating procedures. This could be considered a baseline, from which impacts would either increase or remain the same depending on the type of impact and the procedure.
   - Look at current operations/spill prevention
   - Examine historic data if available
   - Determine if GSLM has been fined or in violation of any permits from general operations
   - Complete a brief literature review concerning sediment generated from roads
   - Use RUSLE/MUSLE or other erosion estimate to estimate fines lost from the dikes to the lake as a result of driving on earthen dikes.

3.3.2 Water Quality Issues Related to Pond Flushing

Issue: Would maintenance flushing of proposed expansion ponds impact the water quality of the Great Salt Lake? Concerns related to this issue included:

- Would flushing of the proposed expansion ponds affect the uptake of selenium, mercury, and other heavy metals into the food chain of the Great Salt Lake? **(Preliminary Issues-2, 7; Agency Comments-3.04; 4.05; 5.03; Public Comments-4.05; 8.01; 25.01; 32.06; 37.02; 48.22, 48.54, 50.02, 52.05, 53.16) (72.03; 84.05; 117.09; 120.01; 122.02; 141.35, 49, 57; 144.21)**
- Would flushing of the proposed Bear River Bay pond increase salinity of Bear River Bay and subsequently affect the lake ecosystem? **(Preliminary Issues-7; Agency Comments-5.05; Public Comments-7.05; 8.01; 12.07; 14.03; 32.02) (72.03; 84.05; 117.09; 120.01; 122.02; 141.35, 49, 57; 144.21)**
- Would pond flushing create nutrient loading in Bear River Bay? **(Preliminary Issues-14) (72.03; 84.05; 117.09; 120.01; 122.02; 141.35, 49, 57; 144.21)**
- The Corps should sample water quality at points north of the pond flushing discharge area because wind tides can push salt water into Bear River Bay. **(141.35)**
- The Corps should address what happens to the flushing of waste material when the lakebed is dry. **(141.114)**

Issue conclusions:

1. Relevance. This issue is relevant. Pond flushing is understood to be an integral part of pond maintenance (east side ponds only). Evaporation from the ponds may concentrate mercury, selenium, and other metals. Flushing creates the potential for these constituents to be removed from the system at higher concentrations. The ponds also may create conditions for mercury to be converted to methyl mercury by bacteria that could be present in the ponds. This form of mercury is biologically available and is bio-magnified along the food chain.
2. Criteria. Impacts will be determined from data collected during pond flushing and any other data available concerning metals, selenium, or other constituents of concern such as nutrients and salinity.
3. Methods.
   - Conduct water sampling during pond flushing. A water quality sampling plan has been implemented with input from US Fish and Wildlife Service concerning mercury. Data gathered from this sampling will be analyzed and supplemented with existing data if available.

- Conduct a review of literature that describes the effects of different water quality constituents, metals, and salinity at various levels.
- Evaluate the east side of the Bear River Bay ponds to determine if a discharge from the ponds caused vegetation covering a large area adjacent to the ponds to die off.

3.3.3 Circulation of the Great Salt Lake

3.3.3.1 Discharge of dredge or fill material

Issue: Would the discharge of dredge or fill material (that is, creation of new dikes) change circulation of lake water by obstructing flow, changing the direction or velocity of flow, or by changing the dimensions of the water body? Specific concerns are listed below. **(Public Comments-48.25-26, 28, 47, 54; 50.01; 53.09)**

- How will the expansion ponds affect the lake's hydrology, flow, navigational access, and how will changes in circulation affect vegetation, invertebrate populations, salinity, and wildlife? **(A2.22; 41.02; 67.01; 69.02; 71.01; 72.04; 75.05; A1.08; 141.21; 141.45, 89, 116; 144.11, 19, 25, 36)**
- How would the Proposed Action affect the shift of minerals between Gunnison Bay, Bear River Bay, and possibly Gilbert Bay, including whether these shifts could concentrate mercury or selenium? **(141.87)**

Issue conclusions:

1. Relevance. This issue is relevant. The lessening of the area where water/flow exchange may occur could impact salinity in various parts of the Bear River Bay and Willard Spur and might subsequently affect ecological conditions of the lake. Restricting circulation could also change the dispersion of freshwater inflow and pollutants entering the lake. The UPRR causeway is an obvious example of the effects of flow barriers in the Great Salt Lake.
2. Criteria. Changes in water depth, change in the amount of area inundated under various water elevations, primary flow direction, salinity changes (possibly an increase greater than historic variation or for increases longer than data indicate) or other water quality changes may be considered as criteria for impacts. The significance of these changes is ecological and is addressed under those topics.
3. Methods
   - For Bear River Bay, create a HEC-RAS or HEC-RAS type model to simulate different scenarios. This model would require field work to gather elevation data and water quality data to calibrate the model. The data would need to include a low elevation, a medium elevation, a high elevation (just after peak runoff?) as well as

information about flow direction changes related to wind, primarily the south arm flows pushing into Bear River Bay because of high winds. This model will also be helpful in addressing other relevant issues. LIDAR may also be a practical method to develop topography.

- Conduct a literature review on circulation in the lake and other examples of freshwater inflows to saline water bodies (for example, the Chesapeake Bay).

3.3.3.2 Normal water fluctuations

Issue: Could major new evaporation surfaces and the removal of large amounts of water from the larger lake system impact normal water fluctuations of the Great Salt Lake? Specific concerns are listed below. **(Public 48.48, 51, 53, 59, 60; 53.19, 21-22) (10.05; 16.01; 27.01; 48.04; 62.02; 73.01; 75.01; 80.04; 81.03; 82.02; 83.03; 84.02; 88.02, 04; 95.02, 04; 96.02; 97.01; 98.02, 04; 99.02, 04; 100.01; 102.02, 04; 103.01; 104.02, 04; 105.01; 107.02, 04; 108.02; 109.03; 111.02, 04; 115.01; 116.02, 04; 117.02, 05, 15; 122.01, 03; 126.02, 04; 127.04, 05, 08; 129.01; 130.06; 131.01, 03; 138.02, 04; 139.02, 04; 141.24-25, 27; 48, 59, 97, 99-100; 144.02, 12, 25, 27- 29, 35, 44, 45; 148.02, 04; A1.03, 06, 23; A2.14, 29-30)**

- Would reduced surface area compound the effects of high/low water years? **(41.01)**
- Would lower lake levels impact water flow to Locomotive Springs? **(117.03)**
- When assessing impacts to lake levels, the effects of wind on Gunnison Bay should be considered. **(133.01)**
- How will the Proposed Action affect water supply and conservation associated as it relates to the public interest? **(141.20)**
- What impact would a drop in lake levels have on the sustainability of the lake as a water of the U.S.? **(141.23)**
- What impact will the proposed water withdrawals have on water levels and circulation between the south arm and north arm? **(141.08; 144.28)**
- The Corps should base its analysis of the Proposed Action using extreme conditions, such as lake levels of 4,211.85 feet (high), 4,191.3 feet (low), and 4,202 feet (average). **(141.95)**
- How will the loss of lake water due to GSLM's withdrawals and evaporation process be quantified and monitored? **(144.30, 32)**
- To adequately and effectively determine the individual, cumulative, and indirect impacts of the Proposed Action on the lake's hydrology, the Corps must base its analysis on the total annual volume of water to be used by all industries drawing water from the lake. **(141.22; 144.45)**

- What impact would a drop in lake levels have on the melting of the mountain snowpacks? **(141.31)**
- The analysis, particularly in Bear River Bay, should evaluate a range of lake level and precipitation scenarios and evaluate the effects of multiple successive years of drought. **(A1.02)**
- Should a minimum lake level be established for public trust maintenance before the Proposed Action is approved? **(144.41)**

Issue conclusions:

1. Relevance. This issue is relevant. Fresh water inputs from spring snowmelt and runoff fill the lake in the early part of the year. Since the lake is the terminus of a closed basin, evaporation lowers lake levels throughout the summer and fall. The timing and amount of draw down may have impacts on the larger lake system.
2. Criteria. An amount of change in evaporative losses and change in timing of those losses from the lake related to increased surface area (pond expansion) may be an indicator of impacts to natural fluctuations. The amount of increased loss considered significant is not yet determined. The biological importance of when the lake is at various levels is unknown.
    - A change in timing or elevation of the Ordinary High Water Mark
    - Change in frequency of high, average, and low water elevations
    - An annual net loss that is cumulative over time leading to overall lake draw down over a number of years
3. Methods
    - Calculate evapo-transpiration (ET) losses under current conditions and under built-out conditions including Clyman Bay ponds. Comparison may show increased ET losses on a seasonal and an annual basis. A significant increase may alter the natural lake fluctuations.
    - Calculate a water balance over 20 years to determine if changes in ET will create a net loss of water from the lake.
    - Conduct a literature review to determine current or background ET from highly saline lakes and determine necessary inputs for the ET calculation.
    - The effect that wind has on lake levels in Gunnison Bay cannot be predicted with accuracy, since wind events are unpredictable. However, general effects can be predicted.

Issue: Would the proposed ponds increase the natural rate of evaporation by artificially expanding the surface area of the lake? **(141.09)**

Issue Conclusions:

1. Relevance. This issue is relevant.
2. Criteria. Increase in the natural evaporation rate.
3. Methods. How do we determine if a change equates an impact?
   - Use modified Penman equation to estimate evaporation rate, adjusted for salinity.
   - Determine the current lake evaporation rate (annual).
   - Determine the current pond evaporation rate (annual) on per area basis.
   - Estimate new evaporation rate on per area basis and adjust for salinity.
   - Choose lake levels to determine present scenarios as well as the scenarios under the Proposed Action and alternatives.

Issue: If the lake rises and floods GSLM's ponds, will GSLM seek damages or ask the state to help protect its dikes by turning on the West Desert pumps? **(108.03; 144.34)**

Issue Conclusions: The West Desert pumps were constructed to protect infrastructure (such as I-80), railway systems, wildlife habitat, recreation areas, and public and private property. When flooding occurred during 1986 and 1987, GSLM's solar evaporation ponds were flooded. While the state would likely utilize the West Desert pumps if flooding occurs again, it would be for the purposes described above, not solely to protect GSLM's dikes. Further, GSLM would take steps necessary to ensure water reached the pumps at critical elevation such as breaching the dikes in order to safeguard the public infrastructure and private property. Thus, this issue is not relevant and will not be examined in detail in the EIS.

3.3.3.3 Fresh water exchange

Issue: Fresh water exchange between Willard Spur and Bear River Bay may be important to maintain ecological conditions and fisheries. Would the project affect this exchange? **(Preliminary Issues-13, 16; Agency Comments-3.13; 4.08; Public Comments-1.01; 3.02; 4.04; 6.02; 13.01; 48.73; 52.08; 53.15, 23)**

Issue conclusions:

1. Relevance. This issue is relevant. Fresh water mixing with salt water creates habitat conditions for many avian and aquatic species.

2. Criteria. The amount of flow discharged into the Bear River Bay varies from year to year. Changes in the extent and timing of mixing from historical extent and timing may be criteria. Changes in salinity above or below historic ranges for the Willard Spur and Bear River Bay area are other criteria. The range of these changes large enough to be considered an impact has yet to be determined.

3. Methods

   - Gather existing data to determine Total Dissolved Solids (TDS) in the Bear River Bay and Willard Spur before GSLM builds the ponds.
   - Models might be used to estimate changes in TDS under altered Bear River flow conditions.
   - Determine expected flows into the Bear River Bay over the next 30 years to document anticipated changes in the amount of inflow to the lake and estimate TDS loads based on altered flows.
   - Review literature on Bear River flows into the Great Salt Lake/Bear River Bay and Willard Spur to determine historical water quality of inflows.

3.3.3.4 Concentration of nutrients and sewage

Issue: Would reduction in the open water area of the Gunnison, Gilbert, and Bear River Bay cause nutrients from sewage and irrigation sources to become more concentrated? **(Public Comments-48.24; 53.15) (141.44; 144.19, 22)**

Issue conclusions:

1. Relevance. This issue is relevant. Sewage contributes nutrients, bacteria, and other potentially harmful constituents. Trash may also be a problem. Increased nutrient concentrations may create eutrophic areas of Bear River Bay/Willard Spur, contributing to algal blooms, and possibly lower dissolved oxygen levels.

2. Criteria. Increases in e-coli or other bacteria, nutrients, and other indicators of sewage (odor, other chemicals, etc.)

3. Methods

   - Sample for specific water quality constituents to monitor including e-coli/bacteria, nitrogen, phosphorus, and visual assessment for garbage.
   - Complete a literature/data review to determine background levels of nutrients and how much sewage is discharged into the lake.
   - Load calculations for nutrients and pathogens based on available data and modeling of future loads based on various flow scenarios.

3.3.3.5 Salinity balance

Issue: Would proposed expansions affect the salinity balance of the North Arm and other parts of the lake, including the South Arm? Specific concerns are listed below. **(Preliminary Issues-1; Agency Comments-4.04; Public Comments-8.03; 48.49; 53.24) (10.05; 41.03; 65.01; 100.01; 105.01; 122.01; 127.04; 81.05; 84.05; 130.04; 130.09; A2.19-20; 141.49, 79, 80, 86; 144.17, 35, 37)**

- If maintaining the salinity of the south arm is critical, lake elevations below 4,194 feet should be avoided where practical. **(A2.14)**
- EIS should model the effects of the potential change in salinity concentrations in the south arm due to the increase in salinity densities in the north arm. **(A3.14)**
- How will any remaining residue be sequestered or returned to the lake and how will that affect Gunnison Bay and whole-lake chemistry? **(144.31)**

Issue conclusions:

1. Relevance. This issue is relevant. Any change in the normal water fluctuations or freshwater exchange of the lake (Sections 3.3.3.2 and 3.3.3.3) could influence the relative salinity of various areas. Change in salinity can affect productivity of brine shrimp and brine flies, the food base for many other species.
2. Criteria. A substantial change in salinity in any part of the lake
3. Methods. Calculate a salt balance. Historic data are available to create a salt balance, which could be used to model various scenarios of changes in salinity.

3.3.4 Beneficial Water Uses

Issue: The Utah Division of Water Quality has designated beneficial uses of the lake's waters, and Utah Administrative Code indicates that the most sensitive use must be supported. Would the permitting decision and DEIS address impacts to designated beneficial uses of the lake's water? **(Public Comments-48.11, 19, 21, 37) (141.41; 144.15, 48)**

Issue conclusions:

1. Relevance. This issue is relevant. Maintaining the Great Salt Lake's designated beneficial uses will be required by the State of Utah.
2. Criteria. Determine if water quality will meet state numerical and narrative standards.
3. Methods. All designated beneficial uses assigned to the Great Salt Lake will be considered. It might be possible to estimate the change in water quality using existing

data and modeling. These estimates would be compared to existing water quality data and standards. Data gathered as part of the overall study will be assessed.

3.3.5 Biological Characteristics of the Aquatic Ecosystem

Issue: What would be the long-term impacts of salt extraction and pond flushing on the biotic community of the Great Salt Lake (algae, brine shrimp, brine flies, and birds)? Specific concerns are listed below. **(Agency Comments-3.05, 10, 14; 5.04-05, 09, 18; Public Comments-14.03; 45.01; 46.01; 47.01; 48.29, 34, 45-46, 49-50, 52, 62, 64; 50.02; 52.09; 53.05, 25) (A1.03; A2.34; A3.24; 109.02; 127.04; 141.49, 77, 82, 84, 86, 90; 144.07, 17, 24, 42; 146.1, 04)**

- Would lowered lake levels impact biota in Gunnison Bay that creates the magenta-colored water? **(95.02; 98.02; 99.02; 102.02; 104.02; 107.02; 111.02; 116.02; 127.08; 126.02; 138.02; 139.02; 148.02)**
- The project area, including the Behrens Trench area, should be mapped for bioherms to determine whether any bioherms may be impacted. **(A2.05; A2.09)**

Issue conclusions:

1. Relevance. This issue is relevant. Brine shrimp constitute an industry as well as a food source for birds. The impact of the changes in salinity could be important and could affect the aquatic ecosystem thus affecting the brine shrimp industry as well as waterfowl dependent on the Great Salt Lake for habitat, including food sources.
2. Criteria
   - Changes in lake water surface elevation (and corresponding surface area and volume) leading to salinity levels outside the range of tolerance for species in the biotic community.
   - Changes in species composition and abundance of phytoplankton associated with changes in salinity and nutrients.
   - Loss of bioherms due to dike construction and/or pond flushing.
   - Changes in brine shrimp recruitment from juveniles to adult shrimp, adult shrimp abundance, and shrimp cysts associated with changes in salinity and phytoplankton species composition and/or abundance.
   - Changes in brine fly abundance associated with changes in phytoplankton composition and abundance.
   - Changes in fish species composition and abundance in freshwater areas of the lake (i.e., Bear River Bay).
3. Methods

- Literature review to determine levels of salinity detrimental to brine shrimp. Field studies, data analysis, and modeling to determine how the salinity could change.
- Literature review of species specific environmental requirements (focusing particularly on salinity and nutrients). Compare environmental requirements with modeling of potential changes in salinity and nutrient loadings.
- Determine the location of bioherms through the review of existing literature (or data) or through site visits in order to assess the potential impact of dike construction and pond flushing.
- Review literature and gather existing baseline data on lake water surface elevation. Assess frequencies of lake level fluctuations based on baseline data and contrast with modeling results to determine potential effects on fisheries in freshwater areas of the lake (i.e., Bear River Bay).

3.3.6 Cumulative Water Quality and Quantity Impacts

3.3.6.1 Cumulative effects of proposed expansions

Issue: What would be cumulative water quality and quantity impacts of the proposed expansions? Specific concerns are as follows:

- What would be the cumulative water quality and quantity impacts in conjunction with past and reasonably foreseeable developments of the Great Salt Lake, such as other mineral extraction operations and possible oil and gas exploration in the north arm? **(Public Comments-48.36, 40) (A1.23; A2.26; 72.05; 80.05; 81.02; 94.01; A1.21, 23; 122.03; 141.54, 56, 73, 83, 116; 144.15, 40, 42, 45)**
- What would be the cumulative water quality and quantity impacts in conjunction with population growth and further development of the Wasatch Front (as this growth and development would increase demand for fresh water, likely resulting in less fresh water reaching the Great Salt Lake)? **(Public Comments-7.03; 48.33, 55)**
- Cumulative impacts analysis should take into account the past 40 years of mineral extraction activity in the project areas. **(A3.11; 141.91; 144.15)**
- Cumulative impacts analysis should take into account the environmental impacts to the project areas caused by future urbanization within the counties adjacent to Bear River Bay, including water demand and runoff and nutrient discharges. **(A3.12; 141.53, 91)**
- What cumulative impact would the Proposed Action, along with the activities of other industrial operators on the lake, have on the lake's hydrology? **(141.34; 144.15)**

- The Corps must know the volume and water quality of all water being used for all existing operations affecting the lake, as well as for the Proposed Action, and consider the impacts of this water use on non-impounded areas of the lake. **(141.57)**

Issue conclusions:

1. Relevance. Cumulative impacts to water quality are relevant. To the extent practicable, the EIS will determine past, existing, and reasonably foreseeable conditions for known factors influencing water quality and circulation of the Great Salt Lake.
2. Criteria. Determine a reasonable foreseeable future range of low and high lake levels. Represent this range in water quality and circulation modeling and determinations.
3. Methods. Results of modeling water fluctuation scenarios (Section 3.3.3.1) will be used to determine changes associated with higher than average water and drier/lower than average water based on reasonably foreseeable conditions. Methods listed for other sections of water quality and circulation issues will be developed to sufficiently address reasonably foreseeable cumulative effects.

3.3.6.2 Cumulative water quality and quantity impacts related to climate change

Issue: What would be the cumulative water quality and quantity impacts of the proposed expansions in conjunction with impacts of future population growth and climate change due to global warming? **(Agency Comments-5.18; Public Comments-48.32, 56) (27.01; 141.115)**

Issue conclusions: This issue is not relevant for the analyses to be completed in the DEIS. There is broad-based scientific consensus that the Earth's average surface temperature is increasing due to human-generated increases in greenhouse gas concentrations (BRAC 2007; IPCC 2007). Utah is projected to warm more than the global average; this may result in declines in mountain snowpack (more precipitation may fall as rain) and episodic periods of prolonged drought (BRAC 2007). In contrast to temperature, however, there is greater uncertainty regarding the implications of climate change for precipitation. Utah is located in a transitional zone where there is less confidence in predicting future precipitation trends; it is possible that precipitation could increase. As such, the likely effects of global warming on freshwater inflows and average lake levels that effect water quality of the Great Salt Lake are uncertain (BRAC 2007, Steenburgh 2008). Therefore, this issue is conjectural and cannot be evaluated by scientific evidence. As noted above in the description of methods for issue 3.3.6.1, modeling for higher than average water and lower than average water levels will be done based on the best available scientific information for reasonably foreseeable conditions. The cumulative impact that future population growth may have on water quantity will be addressed as described under section 3.3.6.1.

3.3.7 Floodplains

Issue: Proposed ponds would eliminate floodplain areas. **(5.03)**

Issue Conclusions: It is the responsibility of the Utah Division of Forestry, Fire, and State Lands to maintain the Great Salt Lake's floodplain as a hazard zone (Utah Code § 65A-10-8). If the lake floods, as it did in 1986-1987, GSLM's ponds would be inundated, as they were in 1986-1987. Thus, the proposed ponds would not eliminate floodplain areas. This issue is not relevant and will not be examined in detail in the EIS.

3.4 Wetlands

Issue: How could the proposed expansions impact wetlands and mudflats as special aquatic sites? Specific concerns from scoping were identified as follows:

- How will the proposed expansions impact the values of wetlands and mudflats as special aquatic sites? **(Agency Comments-5.17; Public Comments-17.01; 34.02; 48.27, 44, 70, 77; 53.11) (141.38, 76; 144.35, 42)**
- How will the DEIS address cumulative impacts to wetlands as special aquatic sites? **(Public Comments-37.02; 48.35, 40)**
- A "wetland landscape profile" should be developed for Bear River Bay and adjacent wetlands. Another profile should be developed for the Gunnison Bay/Clyman Bay area. Compensatory mitigation proposals can then be evaluated relative to the profiles. **(A3.08)**
- The proposed Bear River Bay pond area should not be labeled as playa, since it is covered in sago pondweed and salicornia when flooded. **(26.01)**
- The Corps should complete an analysis of the loss of wetlands surrounding Great Salt Lake to date. **(144.13)**
- Would the Proposed Action affect the connection with eastern shore wetlands? **(144.26)**

Issue conclusions:

1. Relevance. This issue is relevant. Wetlands are vital habitat to many species and provide many ecological functions. The fill or dredge of wetlands is regulated under Section 404 of the Clean Water Act.
2. Criteria. Different criteria for impacts will be proposed for different types of special aquatic sites. Complete and permanent inundation of playa, mudflat, or wetland, change

in function of the special aquatic sites, and fulfills section 404 permit requirements might be criteria for impacts.

3. Methods. A functional assessment, classification of wetland types, and mapping of distinct special aquatic sites to determine baseline and then determine loss and change in function of wetlands, playas, and seasonally flooded lake bed. An ordinary high water mark for the north arm and the Bear River Bay area should also be determined to help differentiate between lake bed, playa, jurisdictional wetlands, and seasonally flooded lake bed.

3.5 Wildlife and Vegetation

Issue: How will the Proposed Action affect wildlife and vegetation? Specific concerns are as follows:

- Birds and mammals can be observed cohabitating while mining operations progress. **(1.02)**
- Would certain species be disproportionately affected by the Proposed Action? **(10.06)**
- Proposed Action may cause food chain disruption. **(4.02; 11.02; 73.01; A1.04-6; 141.81; 144.07, 17)**
- How would the Proposed Action impact wildlife/avian species and habitat, including mudflat and shoreline habitat? **(10.05; 11.01; 16.01; 26.02; 35.03; 37.02; 65.01; 69.03; 70.01; 72.06; 73.01; 74.01; 84.02-03; 88.01; 89.01; 91.01; 92.03; 95.01; 96.01; 98.01; 99.01; 100.01; 102.01; 103.01; 104.01; 105.01; 106.01; 107.01; 108.01; 111.01; 114.03; 116.01; 117.16; 119.01; 120.01; 122.03; 124.01; 126.01; 127.01; 130.06-07; A1.05; A2.01, 28; 138.01; 139.01; 140.01; 141.81, 100-101, 116; 144.09, 12-13, 24, 35, 42; 148.01)**
- Would Proposed Action allow disease to spread among birds more easily by condensing them in a smaller area? **(75.01; A1.06)**
- Would the Proposed Action impact insect populations? **(114.03; 117.16; 124.01)**
- How would the Proposed Action impact migratory birds during high water years? **(A1.18; 141.75; 144.12)**
- The EIS should use DWR waterbird survey data when analyzing all of the project alternatives. **(A2.07)**
- How would habitat loss affect resident and migratory waterbirds during different water elevations and how would losses be mitigated? **(A2.29; 144.12)**
- What would be the impact of changing water quality and salinity levels on migratory birds and their habitat? **(A1.09; 141.49, 86)**

- Would the visual impact of red brine in ponds affect migratory waterfowl? **(61.02)**
- What is the projected bird use of the proposed ponds and what would be the impact of that use? **(144.14)**
- What would be the Proposed Action's cumulative impact on marbled godwit populations? **(A1.07)**
- What would be the Proposed Action's impacts to species listed by FWS as Birds of Conservation Concern, as well as Partners in Flight Priority Species? **(A1.14)**
- An avian model should be used to predict impacts to aquatic birds based on direct habitat loss within a landscape context as well as habitat degradation caused by change in water quality and availability. **(A3.06)**
- The Corps should complete an analysis of studies or literature on the impacts of constructed dikes on nesting and foraging bird habitat. **(144.05)**
- The Corps should gather existing monitoring studies such as the Great Salt Lake Waterbird Survey and use them to complete a systematic evaluation of all avian use of the project areas, and the importance of these areas to lakewide wildlife populations. **(144.04)**
- The Corps must take a species-specific approach to habitat availability and loss. **(141.103)**
- Would the Proposed Action alter bird usage of nearby wildlife management areas? **(75.04)**
- What is the impact of phragmites on the lake's hydrology? **(141.110)**

Issue Conclusions:

1. Relevance. These are relevant issues and will be examined in the EIS.
2. Criteria. See criteria listed below under Sections 3.5.1-3.5.5.
3. Methods. See methods listed below under Sections 3.5.1-3.5.5.

3.5.1 Avian Habitat in Bear River Bay

Issue: Would the proposed expansions in the Bear River Bay cause avian habitat loss? Specific concerns are as follows:

- What are the water bird uses in the area of the proposed Bear River Bay expansion pond and what habitat losses will result from the proposed expansion? Uses in the vicinity may include molting/brood rearing areas for Canada geese and ducks, a foraging area for fish-eating bird species such as American pelican, double-crested cormorant, western grebe, great blue heron, and an eared grebe nesting colony.

(Preliminary Issues-8, 9, 12, 13; Agency Comments-3.01, 12; 4.08; 5.06, 13; Public Comments-1.01, 03; 3.05; 4.01, 02, 03, 06; 5.01, 02; 6.01, 03; 7.01; 8.02, 04; 11.01; 12.02; 15.01; 18.01; 19.02; 20.01; 21.01; 22.01; 23.02; 24.01; 28.01; 33.03; 34.01, 02; 36.01; 38.01; 40.02; 41.01; 42.03; 48.69, 70, 72; 53.03, 12) (5.01; 50.01, 02; 66.01; 76.01; 78.01; 80.01; 81.01; 83.01; 128.01; 130.02-03; A1.13; 131.02; 132.01; 141.04-05; 145.02, 05; A2.06; A3.25)

- Would the proposed Bear River Bay expansion eliminate shallow water areas that are important loafing and feeding areas for waterfowl and shorebirds? **(Preliminary Issues-9, 12, 13; Agency Comments-4.08; 5.06, 08, 13; Public Comments-3.01; 8.06; 10.01, 02; 11.02; 14.04; 19.03; 31.02; 34.02; 43.01; 48.05, 69; 52.07)**
- What would be the impacts to avian use in Bear River Bay due to potential change in fresh water exchange between Willard Spur and Bear River? **(A3.23; 141.89)**
- The EIS should document all seasons of waterbird use to provide a better understanding of year-round avian use of Bear River Bay. **(A2.08)**
- How would a potential reduction in Bear River Bay and Willard Spur waters, as well as change in water circulation, affect the use of the area by fish populations and the birds that prey upon the fish? **(A2.30)**
- What are the biotic and abiotic features that attract birds to Bear River Bay? **(A1.11)**
- How would the Proposed Action impact vegetation in Bear River Bay, such as sago pondweed and salicornia, which are critical for birds? **(16.01; 66.01; 76.02; 82.03; 83.01; 128.01; A2.32; 141.102; 145.02)**
- Would the alteration of flow into Bear River Bay create more invasive species (phragmites) problems? **(75.06; 84.02; 130.06; 144.33)**
- Would the Proposed Action have an impact on the Bear River Migratory Bird Refuge? **(142.01)**

Issue conclusions:

1. Relevance. These are relevant issues. Past research and literature have established uses of Bear River Bay by water birds. The proposed Bear River Bay expansion pond could potentially impact these uses.
2. Criteria.
   - Change in habitat acreage
   - Change in available food sources (vegetation, prey base)
3. Methods

- Literature review of research documenting bird uses of Bear River Bay and Willard Spur.
- Aerial surveys of Bear River Bay in 2007 (low water); recommend continued surveys in 2008 (possibly higher water levels).
- Evaluation of historical aerial survey data collected by Utah Division of Wildlife Resources.
- Use results of HEC modeling of Bear River Bay and Willard Spur (Section 3.3.3.1) to determine available habitat.
- Use aquatic resources analysis (Section 3.3.5) to determine effects on available food resources for birds.

3.5.2 Avian Habitat in the North Arm

Issue: Would the proposed expansions in the North Arm cause avian habitat loss? Specific concerns are as follows:

- Does the shoreline of the proposed Dolphin Island expansion pond provide habitat for shorebirds, including the snowy plover and American avocet? Could the proposed expansion impact this use? **(Preliminary Issues-5, 10; Agency Comments-1.03; 3.01, 08, 09; 4.07; 5.11; Public Comments-29.02; 48.68; 52.03; 53.03, 07, 12) (53.01; 81.04; A3.21; 141.60, 75; 144.09)**
- Would the proposed expansions impact avian use of the North Arm? In high water years brine shrimp production in the North Arm may exceed that in the South Arm. Birds such as the eared grebe, Wilson's phalarope, and red-necked phalarope may rely on the North Arm as a food source under high water conditions. Bioherm structures also exist in the North Arm, which are necessary for brine fly production; brine flies are an important food source for migratory shorebirds. **(Agency Comments-3.11; 5.12; Public Comments-2.02; 48.01, 66; 52.04)**
- How would the Proposed Action impact avian use along the north arm shoreline? **(50.01; A3.22; A1.17; 141.60, 75; 146.03)**
- The entire newly proposed ponds area should be surveyed for snowy plover. **(A2.24)**
- Wildlife surveys should be conducted in the upland habitat around Clyman Bay and adjacent to the western shoreline to determine whether the presence of permanent ponds would impact wildlife species, such as small mammals or raptors. **(A2.25)**

Issue conclusions:

1. Relevance. These are relevant issues. Previous research and literature suggest the possibility that snowy plovers may utilize the west shoreline of the North Arm. At present, the North Arm is too saline to support food resources for shorebirds (brine shrimp, brine flies). However, planned analyses of circulation (Section 3.3.3) and aquatic resources (Section 3.3.5) can be used to evaluate potential changes to the North Arm in terms of potentially suitable habitat for birds.
2. Criteria.
   - Change in available shoreline habitat for snowy plover
   - Change in available food source for birds in the North Arm
   - Change in salt concentrations of the North Arm
3. Methods
   - Ground surveys of the western shoreline of Clyman Bay were conducted in 2007 to document shorebird activity. Although breeding snowy plovers were found, no other shorebird species were found using the area. Continued ground surveys of the shoreline in 2008 are important, especially since 2007 was a low water year.
   - Determine which water surface elevations in the North Arm provide adequate habitat for snowy plovers and the frequency that these elevations are exceeded over a 30 year time period.
   - Impacts to brine fly production in the North Arm will be evaluated based on a literature review to determine what the ideal salinity concentrations for production of brine flies are and what the corresponding water surface elevations are.
   - Gauging station data will be used to determine the frequency (over a 30 year period) at which water surface elevations in the North Arm are high enough to maintain salinity concentrations necessary for brine fly production.
   - Use aquatic resource analysis (Section 3.3.5) to determine frequency with which brine fly and brine shrimp productivity would be sufficient for avian use of the North Arm.

3.5.3 Avian Disturbance and Mortality

Issue: Construction of dikes and operational use of dikes and ponds may cause avian wildlife disturbance and mortality. Specific concerns identified during scoping were as follows:

- What avian wildlife disruptions and mortality could occur from day-to-day operational activities occurring at expansion ponds (for example, noise, lighting, and

land vibrations)? **(Agency Comments-3.17; 5.13, 15, 16; Public Comments-48.74; 53.04)** **(41.04; 80.02; 84.03; 130.07; 144.06)**

- Gunnison Island is currently the only nesting location for American white pelican in Utah and is one of the largest breeding colonies in North America. Other avian species nesting here may include California gull, peregrine falcon, and great blue heron. Would proposed Clyman Bay expansions impact avian nesting on Gunnison Island? **(Preliminary Issues-3, 11; Agency Comments-3.06; 4.07; 5.11; Public Comments-2.01; 28.02; 48.02, 65, 74; 49.04; 52.01)** **(A3.21; 127.02; 141.02, 74; 144.08)**
- Would construction of the Dolphin Island Pond affect wildlife use in uplands or wetlands adjacent to the west side of the proposed pond? Could wildlife in the area, particularly nesting raptors, be disturbed? **(Preliminary Issues-6)**
- Would new dikes facilitate human access to Gunnison Island during low lake levels? Similarly, would humans have increased access to critical habitat areas of Bear River Bay, thereby increasing disturbance of avian wildlife? **(Agency Comments-3.07; Public Comments-48.65; 49.04; 50.03; 52.02; 53.06)**
- As a result of the proposed expansions, could birds become concentrated in a smaller area within Bear River Bay and Willard Spur, thereby increasing chances for botulism outbreaks, avian cholera, or other diseases? **(Agency Comments-3.15; 5.07; Public Comments-10.03; 13.02; 14.02; 19.01; 31.01; 32.05)**
- How will GSLM prevent juvenile pelicans from becoming trapped in the proposed ponds? **(A2.23)**
- Would the increase in dikes create additional habitat for nesting gulls which may, in turn, prey upon other nesting birds? **(A2.33)**
- How would the Proposed Action impact species nesting on islands in Gunnison Bay (Cub, Dolphin, and Gunnison)? **(A1.17)**

Issue conclusions:

1. Relevance. These are relevant issues. Past research has documented avian use of Bear River Bay and Gunnison Island. Avian diseases are a known concern, particularly for areas with large concentrations of birds.
2. Criteria.
   - Levels of avian disturbance – criteria to be determined.
   - For avian disease issue, determine likelihood that birds would congregate in a smaller area or areas of Bear River Bay/Willard Spur as a result of the project and likelihood of avian disease outbreaks.

3. Methods

- Review relevant literature to determine:

  a. how project activities might disturb avian communities in both the Bear River Bay and the North Arm;

  b. how project activities to within 3 miles of Gunnison Island might impact breeding bird communities on the island;

  c. how construction of the evaporation ponds and daily operational and maintenance activities might impact nesting raptors; and

  d. how likelihood and severity of avian disease risk may increase with the proposed expansions.

- Interview biologists/managers at Bear River Migratory Bird Refuge, Farmington Bay WMA, and other areas where birds are known to congregate in large numbers; use this information to help assess possible changes in avian disease risk resulting from the proposed expansions. Determine if proposed expansions would cause birds to congregate in a smaller area.

- Conduct additional surveys:

  a. Conduct additional surveys of west shoreline from the existing evaporation ponds north to Dolphin Island to identify where raptors are most likely to nest relative to the proposed expansion area.

  b. Continue aerial surveys of Bear River Bay for another field season to map those portions of the bay that are most frequently used by avian populations. Once mapped, the distribution of birds can be compared to the location of the proposed expansion pond.

- Conduct measurements of existing noise conditions and predicted noise conditions for Gunnison Island. Predicted conditions will take into account GSLM operations and dike construction.

3.5.4 Avian Predation

Issue: Dikes may facilitate access of mammalian predators to migratory bird foraging, roosting, and nesting sites. Specific concerns identified during scoping were as follows:

- Avian predation in Bear River Bay may increase with the proposed expansion pond. The Bear River Refuge has found it necessary to implement predator control actions in order to support sustainable waterfowl and shorebird nesting success rates. Would the proposed Bear River Bay expansion increase access of mammalian predators to known migratory bird foraging, roosting, and nesting sites? **(Agency Comments-**

5.10; Public Comments-14.04; 40.03; 48.74; 49.02) (11.03; 27.01; 74.01; 75.02; 80.02; 81.03; 84.02-03; 87.02, 04; 127.02; 130.06-07; A1.06, 10; A2.04; 141.59, 74; 144.06)

- Would new dikes for the proposed Dolphin Island expansion act as predator conduit to Gunnison Island? Additionally, would these dikes become a roosting site for fledgling pelicans, further exposing them to predators? **(Preliminary Issues-4, 11; Agency Comments-3.07; Public Comments-26.02; 48.65; 49.04; 52.02; 53.06) (11.03; 27.01; 74.01; 75.02; 80.02; 81.03; 84.02-03; 87.02, 04; 127.02; 130.06-07; A1.06, 10; A2.04; 141.59, 74; 144.06)**

Issue conclusions:

1. Relevance. This is a relevant issue; past research has identified predator problems for migratory birds in similar settings of the Great Salt Lake ecosystem (for example, the dike system of Bear River Migratory Bird Refuge).
2. Criteria. Estimate extent of breeding bird activity on existing GSLM evaporative pond dikes. Use this information to extrapolate likelihood of increased bird breeding on expanded dikes and thus increased risk of predation.
3. Methods
   - Literature review to determine whether similar situations occur elsewhere and what the outcomes were.
   - Survey a representative sample of dikes around existing ponds to estimate use for nesting and roosting.
   - Evaluate gauging station water data to determine how frequently lake levels drop sufficiently to create a land bridge to Gunnison Island. This process may also help determine whether a land bridge to Gunnison Island would be present in the absence of an expansion pond. Determine maximum water depth that would permit movement of mammalian predators to Gunnison Island based on literature review and interviews with predator experts.

3.5.5 Cumulative Impacts to Avian Habitat

Issue: Would the proposed expansions result in cumulative avian habitat loss and what would be the affects of that loss? Specific concerns are as follows:

- What are the cumulative impacts of the proposed expansions on wildlife habitat in the context of past and future mineral and oil and gas developments in the North Arm and Bear River Bay? **(Agency Comments-3.02; 5.07, 16, 18; Public Comments-16.01; 26.01; 32.01; 34.01; 36.02; 37.02; 39.01; 48.40; 53.25)**

- Over the longer term, the North Arm may become more important as avian habitat than it is currently. Dikes and evaporation ponds in Clyman Bay may be in place for several decades. Within that time frame, could the causeway be breached or actions taken to better circulate the lake's waters? **(Public Comments-48.67)**

Issue conclusions:

1. Relevance. Cumulative impacts of minerals leasing on avian habitat is a relevant issue. Existing, proposed, and possible future mineral leases are part of the GSL Comprehensive Management Plan. However, possible breach of the railroad causeway is speculative and is not part of any existing plans for management of the Great Salt Lake.
2. Criteria. Estimate amount of habitat loss resulting from existing, proposed, and probable future minerals leases.
3. Methods.
   - Review existing leases to determine acres under active leases.
   - Determine probable future leases in consultation with Utah FFSL.
   - Evaluate actual and potential disturbance or loss of viable wildlife habitat associated with leases.

3.6 Threatened and Endangered Species

Issue: While the Corps does not anticipate concerns for Threatened and Endangered Species (as indicated in the Public Notice), should the project area be inventoried in accordance with the Endangered Species Act? **(Agency Comments-5.14; Public Comments-44.01; 48.61)** **(141.81)**

Issue conclusions:

1. Relevance. This issue is not relevant; USFWS, a cooperating agency, has confirmed that there are no concerns for federally-listed Threatened and Endangered species in the project area.
2. Criteria. None.
3. Methods. While the issue is not a relevant concern for the project, the EIS will include a Threatened and Endangered Species section in the description of existing environmental conditions. This section of the EIS will:
   - present a literature review describing habitat requirements for federally-listed Threatened and Endangered Species and state-listed sensitive species in Box Elder County;

- describe the presence/absence of suitable or potentially suitable habitats for these species within the project area.

3.7 Recreation

Issue: How would the proposed expansions impact recreational uses of the Great Salt Lake or other locations? Specific concerns are as follows:

- Recreational uses of Bear River Bay and Willard Spur include bird watching, boating, guided trips, and waterfowl hunting. Private duck clubs are located in the vicinity. Would waterfowl hunters have concerns regarding recreational access and effect on waterfowl? Would public use be concentrated in a smaller area, thereby impacting navigation and recreational values? **(Preliminary Issues-25; Agency Comments-3.18; Public Comments-1.04; 2.03; 5.03; 7.02, 06; 8.05; 9.01; 12.03; 13.03; 14.01; 17.02; 31.03; 33.02; 36.01; 42.02; 48.04, 38; 52.11; 53.01) (35.04; 37.01; 41.05; 70.01; 74.02; 75.03; 76.02; 84.04; 130.01-02, 08; 131.03; 132.01; 141.06, 29, 63-67, 116; 145.05; A2.35)**
- Secondary impacts on anglers and angling revenue may also occur. Bear River Bay and Willard Spur provide an important resource for piscivorous birds. If this resource is impacted, would it result in increased bird use of fishery resources at hatcheries or other lakes and streams? **(Agency Comments-3.19)**
- Impacts to recreational uses of the lake. **(83.02; 88.01; 94.01; 95.01; 96.03; 98.01; 99.01; 100.01; 102.01; 103.01; 104.01; 105.01; 107.01; 111.01; 115.01; 116.01; 122.03; 126.01; 132.01; 138.01; 139.01; 141.3-4, 30, 39, 63, 71, 77; 148.01)**
- Loss of revenue from hunting, hiking, fishing, and other outdoor activities. **(4.01)**
- Impacts on photographers. **(41.05; 103.03; 141.04, 65)**
- The Great Salt Lake ecosystem and the recreational and navigational values it supports cannot absorb an appropriation of 353,000 acre feet. **(141.07)**
- Proposed Action will reduce sense of solitude and remoteness on west side of lake. **(141.68)**

Issue conclusions:

1. Relevance
   - The proposed expansions could have quantitative recreation impacts by reducing access and/or visitation. This is a relevant issue.
   - Qualitative impacts to recreation could also occur if recreational satisfaction declines as a result of the proposed expansions. This is a relevant issue.

- Secondary impacts on anglers and angling revenue is determined to be speculative and therefore could not be a reasonably foreseeable outcome. Even if the EIS determines that piscivorous birds would be displaced by the proposed expansions, it would not be practicable to further determine if or where various species may disperse or what effect this could have on fisheries resources for a given body of water or cumulatively. Fish hatcheries likely already implement measures to reduce predation losses.

2. Criteria

   - Loss of recreation access
   - Change in frequency of recreational visitations
   - Change in quality of recreational experiences. Indicators would likely include: loss of navigable area, reduction in waterfowl and wildlife populations, and visual resources impacts (Section 3.8)

3. Methods

   - Potential impacts on access/navigation can be evaluated by documenting recreational use areas (mapping) and then comparing these areas to HEC hydrologic modeling (Section 3.3.3.1) for Bear River Bay and Willard Spur. Key informants/stakeholders from recreational user groups (for example, Utah Air Boat, Inc. and private duck clubs) can assist in completing a map of recreational use areas.
   - Obtain available data on recreational visitation. Sources of available data on recreation use areas of Bear River Bay and Willard Spur will include: the GSL Comprehensive Management Plan, Utah Division of State Parks, Bear River Migratory Bird Refuge, Utah Division of Wildlife Resources, BLM, private duck clubs, and organized recreational groups (for example, Utah Air Boat, Inc.) Available data on waterfowl hunting (ducks, geese) may be available from DWR, duck clubs.
   - Compare documented recreational use areas and visitation to probable future recreation access and visitation with project alternatives.
   - Analyses of wildlife impacts in the DEIS will provide a basis for estimating impacts on available wildlife resources for bird watching and waterfowl hunting (qualitative impacts). Visual resources analyses will also contribute to the assessment of qualitative recreational impacts of project alternatives (Section 3.8).

3.8 Aesthetic Values

Issue: How will the proposed project impact aesthetic values? The impact of the proposed expansion on the aquatic beauty and aesthetics of Great Salt Lake could be extensive as a significant portion of the lake is currently developed. Specific concerns are listed below. **(Public Comments-27.01; 30.02; 33.01; 48.03, 39) (84.04; 122.03; 130.08; 141.65, 68, 69, 71, 77)**

- Would the visual impact of red brine in the evaporation ponds negatively impact tourism? **(61.01)**
- The natural shoreline of the lake should be preserved. **(29.01; 84.02; 84.03; 130.06-07)**
- Would the Proposed Action lower lake levels and impact the aesthetics and integrity of Spiral Jetty? **(88.04; 95.04; 97.01; 98.04; 99.04; 102.04; 104.04; 107.04; 111.04; 116.04; 126.04; 127.08; 138.04; 139.04; 148.04)**

Issue conclusions:

1. Relevance. Landscape aesthetics of the Great Salt Lake is a relevant issue as the proposed expansions could visually alter significant portions of Bear River Bay and the North Arm.
2. Criteria. The issue can be appropriately addressed by available methods of visual resource analyses. The Bureau of Land Management's Visual Resource Management (VRM) System is an appropriate assessment method for the project area because much of the public land surrounding the GSL is managed by the BLM. The BLM's VRM system is also a widely accepted tool for inventorying scenic values, establishing scenery management objectives, and evaluating impacts from proposed activities.
3. Methods
   - Complete a Visual Resource Inventory using the VRM system. The VRM system uses four classes to describe the different degrees of visual modification allowed in the landscape. Visual Resource Management classes are visual ratings that describe an area in terms of visual quality, viewer sensitivity to the landscape, and the distance in which a viewer would observe an area.
   - Use VRM classes to analyze and to determine the visual impacts of proposed activities on the land and to gauge the amount of disturbance an area can tolerate before it exceeds the visual objectives of the established VRM class. Visual contrast rating is done from critical viewpoints, known as Key Observation Points (KOPs), which are usually along commonly traveled routes, such as highways, access roads, or hiking trails. KOPs would be determined for the proposed project area.
   - If the analysis indicates the potential for substantial change in the landscape character, computer visual simulations would be created.

Issue: What would the visual impact of electricity infrastructure be if diesel pumps are replaced by electric pumps? **(127.09)**

Issue conclusions: There are no plans for GSLM to replace its diesel pumps with electric pumps. Therefore, this issue is not relevant and will not be examined in the EIS.

3.9 Cultural Resources

Issue: Would the proposed project adversely affect any cultural resources (historic, archaeological, Native American)? Specific concerns are listed below. **(Preliminary Issues-23; Public Comments-48.09, 13) (141.94)**

- The Corps must make a concerted effort to seek input from the state's Native American peoples in order to make certain that the EIS includes adequate analysis of the impact of the Proposed Action on cultural resources. **(141.92)**
- If the Proposed Action inadvertently discovers habitation sites, plant gathering areas, human remains, and objects of cultural patrimony the Corps must notify the Navajo Nation Historic Preservation Department—Traditional Culture Program in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA). **(A4.01)**
- Would the Proposed Action lower lake levels and impact archaeological sites in the vicinity of the lake? **(141.27)**
- Would the Proposed Action increase human use of archaeological areas of Clyman Bay? **(141.93)**

Issue conclusions:

1. Relevance. The issue is relevant based on the potential to conflict with the National Historic Preservation Act and the Native American Graves Reparation Act.
2. Criteria. A designation of adverse effect concurred by the State Historic Preservation Officer and, if needed, the Advisory Council of Historic Places. Unresolved conflict with a Native American Tribe.
3. Methods
   - Letters of inquiry will be sent to all appropriate Native American Tribes seeking concerns. Where concerns are identified, additional coordination with the appropriate Tribe will be conducted to identify specific information.
   - A literature and file search will be conducted that includes file searches for previous inventories and sites in the Area of Potential Effect, which will include the area of the West Desert that may serve as an alternative site.

- The Corps will enter into a Programmatic Agreement with the Utah SHPO to identify a systematic approach to surveying and identifying potential Historic Properties that could be affected with the Area of Potential Affect of the Proposed Action and its alternatives.
- SHPO GIS search
- BLM File search
- If warranted by the file and literature search, on-site inventories will be conducted in areas of specific concern. Locations and extent of any on-site investigations will be identified in coordination with the SHPO and Corps.
- Submittal of a paleontological letter to State Paleontologist Office
- Information collected will be assessed in relation to the proposed project and alternatives. Where direct (spatial) conflict occurs, the likelihood of effect will be assessed based upon the potential for site degradation or protection.

3.10 Socioeconomic Issues

Issue: How would the Proposed Action affect socioeconomic uses of the lake? Specific concerns are as follows:

- What impact would the withdrawal of 509,000 acre feet of water have on the lake's general economic value to Box Elder County, Cache County, Weber County, Davis County, and the State of Utah in particular, and to the United States in general? **(141.71)**
- Would Tooele County be prepared to cover the cost of maintaining the public road near the proposed SOP plant near U.S. Magnesium? **(146.05)**
- What impact would the Proposed Action have on the state's revenues from Great Salt Lake tourism? **(4.01; 80.03)**
- Would the Proposed Action cause negative impacts to other businesses operating on the lake? **(20.01; 36.01; 48.01, 03, 05; 114.02; 117.04-05, 07- 09, 12, 15; 129.01; 135.01; 134.01)**
- How would the Proposed Action affect the human population located on or near the lake? **(117.17; 141.28)**
- Would the lowering of lake levels resulting from the Proposed Action be a taking of rights owned by NorthShore Limited Partnership without just compensation? **(48.04)**

Issue Conclusions:

1. Relevance. These issues are relevant and will be examined in the EIS.

2. Criteria. These impacts would primarily be monetary expenses. Potential economic impacts to people, industries, the state, and surrounding counties will be examined. Particular attention will be paid to the potential for the Proposed Action and its alternatives to lower lake levels and possibly limit access to brine for other industries operating on the lake.

3. Methods.

   - Lake elevation modeling will be used to determine the potential effects of the Proposed Action and its alternatives on lake levels. These results will then be used to determine how the Proposed Action and its alternatives may affect other industries' access to lake brines.

   - While it would be difficult to put an exact number on the economic impact that the Proposed Action and its alternatives might have on the value of the lake to the state and surrounding counties, including impacts to tourism, generalizations can be made (i.e., less area of the lake available for leasing, less area available for hunting).

Issue: Human consumptive use of Great Salt Lake water (e.g., nutritional supplements) should take priority over other uses. **(48.02; 117.08)**

Issue Conclusions: The Corps has no jurisdiction over prioritizing uses of Great Salt Lake water. The Utah Division of Forestry, Fire, and State Lands is responsible for balancing the different uses of Great Salt Lake resources. Therefore, this issue is not relevant and will not be examined in the EIS.

Issue: How would the Proposed Action impact agriculture that depends on the lake? **(20.02)**

Issue Conclusions: Great Salt Lake's water is too saline to be used for agricultural purposes. Thus, this issue is not relevant and will not be examined in detail in the EIS.

3.10.1 Brine Shrimp Industry

Issue: What impacts would the Proposed Action have on the brine shrimp industry? Specific concerns are as follows:

- Would decreased brine shrimp cyst quality or possible contaminant introduction to areas open to brine shrimp harvesting impact the brine shrimp industry? **(Preliminary Issues-24; Agency Comments-3.20; 4.08; Public Comments-8.07; 12.04; 53.05) (112.01; 122.03; 144.07; 146.01, 06)**

- The Proposed Action would cover up areas along the western shore of the north arm where brine shrimp cysts have been harvested in the past. **(146.02)**

Issue conclusions:

1. Relevance. The issue is relevant as the brine shrimp industry is dependent upon ecological conditions favorable to the production of brine shrimp cyst. The project has the potential to affect these conditions and the EIS document will investigate this potential in terms of water circulation (Section 3.3.3) and biological characteristics (Section 3.3.5).

2. Criteria. Change in productivity of brine shrimp, as determined by analyses for Section 3.3.5

3. Methods

   - The DEIS will document existing conditions for the brine shrimp industry in terms of use areas, harvest data, regulations, and economic value of the brine shrimp harvest. Much of this information is available from the Great Salt Lake Ecosystem Program. Other information may be obtained by consulting State of Utah regulations and through a review of literature.

   - Evaluate implications for the brine shrimp industry of any identified impacts on brine shrimp productivity from project alternatives advanced for the analysis.

3.10.2 Economic Value of Mineral Extraction

Issue: The proposed expansions are motivated by increasing world demand for potash fertilizer. How does minerals extraction from the Great Salt Lake contribute positively to the state's economy through jobs, taxes, and royalties? Specific concerns are listed below. **(Public Comments-50.04; 54.01; 56.01; 57.01; 58.01; 59.01; 60.01; 62.01-03; 63.01; 64.01; 65.01; 66.01; 67.01; 68.01; 69.01; 70.01; 71.01; 72.01) (1.04; 2.01, 04; 6.01-02, 05-06; 12.02; 13.02; 17.01; 18.01; 21.01; 25.02; 28.01; 30.01; 32.01; 33.01; 34.01; 42.01, 03; 43.01; 44.03; 47.01; 49.01; 52.02; 54.02; 55.01; 56.01; 58.01; 121.01; 125.01; 137.01; 143.03-04; F1.01-02, 05)**

- How will the royalties and taxes collected from GSLM be spent? They should be used to fund environmental issues around Great Salt Lake. **(81.07; 141.108)**

- The state could create more jobs and revenue in less destructive ways. **(87.03; 117.08, 10, 13, 14)**

- The Corps should look at net economic impact rather than just job creation when analyzing the economic impacts of the Proposed Action, since the people of Utah could be subsidizing global consumers of potassium sulfate by overexploitation of environmental resources. **(141.119)**

- The Corps should evaluate the economic value of GSLM's existing operations, as well as the potential value of its proposed expansion, to the economy of Utah. **(141.120)**

Issue conclusions:

1. Relevance. The issue is relevant to the purpose and need for the proposed action and the determination of alternatives that would satisfy the purpose and need.
2. Criteria. Determine available information on potash fertilizer demand (some key sources have been identified in scoping). Document available information in EIS purpose and need.
3. Methods.
    - Document existing conditions for SOP production and demand
    - Develop project purpose & need
    - For project alternatives advanced for analysis, evaluate ability of each alternative to satisfy the purpose & need

3.11 General Environment/Ecosystem

The following issues contain general environmental concerns or combinations of different resource concerns that are already identified as issues in the preceding sections of this Scoping Report.

Comment 1: Proposed Action would impact the lake's ecosystem. **(20.02; 48.06; 79.01; 84.01; 88.01-02; 94.01; 95.01; 96.04; 105.01; 106.04; 114.01, 05; 115.01; 117.06, 11, 19; 118.01; 120.01; 122.04; 124.01; 126.01; 130.06; 140.01; 141.01, 49, 61; 144.01, 15, 40; 147.01)** ***(See sections 3.2; 3.3; 3.4; and 3.4)***

Comment 2: Proposed Action would have a minimal impact on the environment. **(21.02; 25.03; 28.02; 32.01; 34.01; 43.02; 44.02; 49.01; 52.01; 57.01-02; 58.02; 86.01; 121.01; 125.02; 136.01; 143.02)** ***(See sections 3.2; 3.3; and 3.4)***

Comment 3: Impacts to riparian and littoral areas should be avoided. **(A1.20)** ***(See sections 3.3; 3.4; and 3.5)***

Comment 4: What will be the impacts to algae, submerged aquatic vegetation, wildlife, brine shrimp populations, and each Bay's ecology? **(A2.21)** ***(See sections 3.3.5 and 3.5)***

Comment 5: Impacts would go far beyond the footprint and affect salinity, habitat mix, and contamination. **(10.04; 130.03; 144.03)** ***(See sections 3.3.1; 3.3.2; 3.3.3.2; 3.3.3.4; 3.3.3.5; 3.5.1; and 3.5.2)***

Comment 6: The EIS should include a detailed function and values evaluation of the aquatic resources that are being impacted. **(A3.03)** ***(See section 4.2)***

Comment 7: The Corps should evaluate the Proposed Action's impacts to Dolphin Island. **(45.01; 141.117)**

Comment 8: Lake should not be harmed for short-term financial gain. **(19.01; 41.06; 64.01; 92.05; 93.01; 106.03; 118.01; 120.01; 123.01; 124.01; 145.01)**

Comment 9: Due to the difficulty in modeling and assessing impacts, the Corps should err on the conservative side. **(53.02; 72.01; 106.05; 109.01; 127.03-04)**

Comment 10: GSLM has exhibited exemplary environmental stewardship. **(30.01; 40.01; 42.02; 49.02-04; 52.01; 54.01; 55.01; 56.01)**

Comment 11: The EIS should identify the amount, location, and timeframe of temporary disturbance as well as permanent facilities that could result from the Proposed Action. **(A1.19)**

Comment 12: When assessing impacts, it is important to look at the lake as a whole, and not just its separate bays. **(133.02; 144.16)**

Comment 13: The Corps must consider the Proposed Action's wholesale transformation of a significant part of Great Salt Lake on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds. **(141.85)**

Comment 14: The Corps must determine whether the State of Utah has developed and adopted a regular program for auditing the lake's resources and designing systems for sustainable management of those resources. **(141.109)**

3.12 Mitigation

The extent of mitigation that will be required will not become evident until impact analyses are carried out. Thus, these issues will not be addressed until the Proposed Action and its alternatives potential impacts have been identified.

Comment 1: It would be impossible to mitigate for a project of this size. **(10.03; 132.03; 141.61)**

Comment 2: Mitigation should include the option for off-site, in-kind habitat compensation. **(A3.09; A1.16)**

Comment 3: If the project is phased, the progression of evaporation pond construction can be tied to results from a mitigation effectiveness monitoring program. **(A3.09)**

Comment 4: Reclamation requirements for impacts to playas and other jurisdictional waters of the U.S. should be based on proven techniques. **(92.04)**

Comment 5: The project proponent's Section 404 application fails to include a statement showing how anticipated impacts are to be compensated for or why such compensation should not be required. **(141.10)**

Comment 6: The Corps should fully address, and provide a detailed explanation of, GSLM's proposal to mitigate each of the foreseeable impacts of the Proposed Action. **(141.11; 144.46)**

Comment 7: Until the Corps has ascertained that the applicant has avoided and minimized impacts to the maximum extent possible, and until it is satisfied that no other on-site or off-site alternatives exist to minimize impacts, an analysis of any compensatory mitigation is premature. **(141.15)**

Comment 8: The Corps must account for the possibility that GSLM may not be able to remain economically viable and address how reclamation of the evaporation ponds would occur. **(141.122; 144.39)**

Comment 9: GSLM must be willing to breach its dikes, excavate a trench, or do anything else needed to allow water to flow to the West Desert Pumping Project's inlet canal, if necessary. **(A2.11)**

Comment 10: Mitigation needs to be publicly discussed and debated prior to the issuance of a permit. **(144.46)**

Comment 11: GSLM should be required to do predator control on Bear River Bay dikes. **(127.06)**

Comment 12: Impact and mitigation evaluation should take into account the full complement of best management practices needed to manage avian predation. **(A3.10)**

Comment 13: Executive Order 13186 should be followed in creating lease stipulations that recommend ground disturbing activities occur outside critical breeding seasons for migratory birds; minimizing temporary and long-term habitat losses; and requiring mitigation for unavoidable habitat losses, particularly at the field development stage. **(A1.15)**

Comment 14: There should be a long-term plan for monitoring impacts to avian resources, as well as a mitigation plan for avian resources. **(A1.13)**

Comment 15: Impact and mitigation evaluation should be based on a clear articulation of how bird occurrence relates to avian use and the overall aquatic resource condition. **(A3.10)**

Comment 16: GSLM should convert all its pumps to solar/electric to reduce carbon emissions. **(70.03)**

Comment 17: Mitigation measures for visual impacts should be identified, such as best available control technology and fugitive dust control measures for roadways. **(A3.18)**

Comment 18: New channel access into Bear River Bay from Willard Spur should be provided to replace the existing channel flow. **(82.01)**

Comment 19: The Corps should consider some sort of conservation pool, so that if lake levels begin to fall below a certain level, restrictions could be placed on pumping operations. **(77.01; 127.05; 141.99)**

Comment 20: Along with the royalties and taxes that GSLM provides, it should also be required to contribute to managing and improving wildlife habitat around the lake. **(81.08)**

Comment 21: The Corps should require a rigorous operation protocol that monitors contaminant levels near areas of physical lake disturbances. **(A2.03)**

Comment 22: GSLM should be required to bear the full cost of the impacts the Proposed Action would cause to businesses and persons. **(48.07; 114.04; 117.18)**

3.13 Great Salt Lake Comprehensive Management Plan

Comment 1: Proposed Action is not consistent with the Comprehensive Management Plan's goals. **(117.06-07)**

Comment 2: There are more beneficial uses for the lake's water. **(117.07-08)**

Comment 3: Proposed Action does not encourage development of the lake which will preserve the lake and encourage the availability of brine for lake extraction industries. **(117.01)**

Comment 4: Proposed Action does not encourage the use of appropriate areas for the extraction of brines, minerals, chemicals, and petro-chemicals. **(117.01)**

Comment 5: Proposed Action does not encourage the development of an integrated industrial complex. **(117.01)**

Comment 6: Proposed Action does not balance multiple use and sustainability of the lake and its resources. **(117.01, 05)**

3.14 Public Access/Land

Issue: Loss of public access to waters and wetlands. **(11.04; 35.02; 53.03; 85.01; 141.63, 66)**

Issue Conclusions:

1. Relevance. This issue is relevant and will be examined in detail in the EIS.

2. Criteria. Public access to the acreages covered by dikes and ponds would not be allowed.
3. Methods. Total acreages that would be inaccessible to the public will be determined. The potential impacts of this loss of access (e.g., loss of recreation opportunities) will be examined in the EIS.

Issue: Although access to the north arm is currently limited by the railroad causeway, there is no reason to believe that this obstruction is permanent. **(141.03)**

Issue Conclusions: Possible breach of the railroad causeway is speculative and is not part the Proposed Action or of any existing plans for management of the Great Salt Lake. Thus, this issue is not relevant and will not be examined in the EIS.

Issue: Industrial interests should not take priority over other uses of public land. **(79.02)**

Issue Conclusions: The Corps has no jurisdiction over the prioritization of uses of Great Salt Lake. The Utah Division of Forestry, Fire, and State Lands has jurisdiction over how areas of Great Salt Lake are leased and how its natural resources are utilized. Thus, this issue is not relevant and will not be examined in the EIS.

Issue: Does the Proposed Action in essence give single-use control over not just the diked areas, but the entire north arm? **(144.42)**

Issue Conclusions: If the Proposed Action or its alternatives were approved, there would still be access to the north arm. Other industries would still be allowed to operate on the north arm. There would still be areas available for lease. There would still be public access to the north arm outside of the proposed pond areas. Thus, this issue is not relevant and will not be examined in the EIS.

4.0 COMMENTS REGARDING EIS DOCUMENTATION AND THE SECTION 404 PERMITTING PROCESS

In addition to identifying issues to be addressed, scoping also provided an initial opportunity for the public to express opinions or suggestions regarding the project, alternatives to the proposed action, methods of analysis, available information sources, mitigation, and permitting decisions. These comments are indexed in the appendices using the same notation as the previous section.

4.1 Purpose and Need, Alternatives, and Scope of the Project

Comment 1: Based on size and extent of project, the Corps determined that the project should proceed as an EIS. The EIS requires compliance with other federal environmental laws. Of

particular significance to this project will be determination of whether the Corps should issue a 404 permit. **(Preliminary Issues-22; Public Comments-48.07)**

Comment 2: Scope of project must be determined, particularly life of project. If the project is discontinued or abandoned, can the area be restored? **(Preliminary Issues-20; Public Comments-42.04)**

Comment 3: A well-defined purpose for the project must be prepared to provide a foundation for determining practicable alternatives and impacts. **(Preliminary Issues-18; Agency Comments-4.01-02; 5.02; Public Comments-23.01; 30.04; 35.01; 37.01; 48.08) (141.19)**

Comment 4: Federal Regulations (40 CFR § 230.10) specify criteria for considering practicable alternatives. Non-water dependent strategies may need to be considered. How will the DEIS consider a range of alternatives to the proposed project? **(Preliminary Issues-19; Public Comments-7.07; 23.03; 24.02; 32.03; 42.01; 48.06, 12; 53.27)**

Comment 5: Alternative alignment of dikes in Clyman Bay: Could the proposed dikes for the Dolphin Island pond be realigned to maximize distance from Gunnison Island? (**Public Comments-26.05; 52.02**)

Comment 6: The Corps should combine analyses of the proposed 2007 expansion with the proposed 2009 expansion and produce one EIS. **(141.12)**

Comment 7: The scale of the project, virtually all of it on jurisdictional wetlands, fails to satisfy the criteria of the Clean Water Act. **(10.01; 132.02)**

Comment 8: When evaluating the feasibility of the Proposed Action, the foundation for analysis should be the sustainability of the waters of the United States. **(141.118; 144.48)**

Comment 9: If the Proposed Action is approved, what will stop GSLM from asking for another expansion in the future? **(145.03)**

Comment 10: The size/acreage of the Proposed Action is unreasonably large. **(11.07; 72.02; 77.02; 88.03; 95.03; 98.03; 99.03; 102.03; 104.03; 107.03; 111.03; 113.02; 116.03; 117.06; 120.01; 138.03; 139.03; 147.01; 148.03)**

Comment 11: The project should be implemented in phases rather than done as one big project. **(114.06; 117.20)**

Comment 12: If the expansion has to happen, the ponds in the north arm should be approved, but not the pond in Bear River Bay. **(90.01)**

Comment 13: The Corps should approve Proposed Action. **(1.01; 2.02; 7.01; 8.01; 9.01; 12.01; 15.01; 18.01; 23.01; 24.01; 25.01; 33.02; 38.01; 39.01; 40.01; 42.03; 44.01; 46.01; 51.01; 52.03; 57.03; 59.01; 62.01; 63.01; 68.01; 143.05, 07; F1.06)**

Comment 14: The Corps should not approve Proposed Action. **(19.01; 35.01; 69.01; 74.03; 77.03; 78.01; 89.01; 90.01; 96.04; 103.04; 108.04; 109.01; 110.01; 115.01; 118.01; 119.01; 122.01, 04; 123.01; 124.01; 126.03; 128.01; 131.04; 145.06)**

Comment 15: In exchange for leases on the west side of the lake, GSLM should forfeit all current and future leases on the east side of the lake. **(70.02)**

Comment 16: Lease areas around Promontory Point containing valuable habitat, which GSLM traded for new north arm lease, do not have automatic protection from future development. **(87.01)**

Comment 17: Proposed Action would help meet the worldwide need for fertilizer. **(2.03; 6.03-04; 9.01; 25.02; 38.02; 55.01; 56.01; 60.01; 86.01; 121.01; 125.01; 143.06; F1.03-04)**

Comment 18: Proposed Action would help keep U.S. from becoming dependent on foreign fertilizers. **(60.01)**

Comment 19: The Corps is required to issue a permit under section 10 of the Rivers and Harbors Act of 1899 for this project. **(141.14)**

Comment 20: The proposed dike top elevation should be included in the public notice so the proposal can be more accurately evaluated. **(A2.12)**

Comment 21: The Corps will not build any new dikes to make new water areas, so why would they allow new dikes to create seasonally used ponds? **(5.02)**

Comment 22: The current purpose and need statement is too narrow and should include the possibility of obtaining potassium salts outside of Great Salt Lake. **(A3.01; A1.01; 141.16, 107)**

Comment 23: The Corps needs to accurately assess the need for the proposed expansion. **(141.20)**

Comment 24: The Corps should explore less harmful alternatives. **(4.03; 11.06; 71.01; A3.02; 141.16, 121; 145.04)**

Comment 25: The Corps should look at alternatives that include obtaining potassium from other facilities within or outside the Great Salt Lake region. **(A3.02)**

Comment 26: To overcome EPA's presumption against the discharge of fill material into special aquatic sites, the project proponent must quantitatively demonstrate that an alternative, practical source for their product (potassium sulfate) does not exist. **(A3.04)**

Comment 27: The Corps must not dismiss alternatives by simply saying that it dismissed them due to economic, technical, logistical, and purpose and need criteria. **(141.13; 141.17)**

Comment 28: The Corps may not issue a Section 404 permit unless the agency has independently verified all relevant information and provided detailed, clear, and convincing information proving that an alternative with less adverse impact is impracticable. **(141.18)**

Comment 29: The Corps should look at alternatives that construct evaporation ponds outside the waters of the U.S., including 54,000 acres of already disturbed land in the West Desert (Newfoundland Evaporation Basin, Bureau of Land Management lands) that has previously been used for evaporation ponds. **(113.01; 141.17)**

Comment 30: Behrens Trench efficiency improvement should be completed before a decision is made to build new ponds. **(81.06)**

Comment 31: When considering alternatives, the Corps should consider its own purpose and need rather than just the project proponent's. **(92.01)**

Comment 32: The Corps should address why deepening the existing evaporation ponds is not a viable alternative to expansion. **(141.111)**

Comment 33: The expanded Proposed Action requires that all potential alternatives be revisited, even if they have already been dismissed. **(144.47)**

Comment 34: The Corps should be transparent and make accessible the economic details of why less-damaging alternatives do not meet the economic screening criterion. **(144.47)**

Comment 35: The Corps should address expert concerns raised by FWS and DWR. **(141.43)**

Comment 36: The Corps should schedule a public hearing to discuss impacts and alternatives. **(11.01-07; 4.04; 14.01; 117.21)**

Comment 37: Public meetings would have been more useful if representatives from environmental groups had been there to provide alternative points of view from GSLM representatives. **(22.01)**

Comment 38: The Corps should provide an objective analysis of what is considered economically feasible. **(92.02)**

Comment 39: GSLM should use traditional business approaches to economic viability, such as technological innovation. **(141.107)**

Comment 40: The project lacks sufficient economic justification, since the end product is otherwise available. **(10.02)**

4.2 Determination of Existing Conditions

Comment 1: The most up-to-date information available should be used to determine existing and reasonably foreseeable conditions. Appropriate coordination between the Corps and other agencies must take place to insure correct determination of existing conditions. **(Agency Comments-3.16; 5.01; Public Comments-34.03; 48.15, 23, 63, 71-72; 49.02-03; 53.02-03, 08; 55.01; 65.02) (A3.20)**

Comment 2: Section 404(b)(1) guidelines describe effects that may individually or collectively contribute to significant degradation of aquatic resources and factual determinations that must be made. Subpart C of the guidelines identifies potential impacts of the discharge of dreged or fill material on the physical and chemical characteristics of the aquatic ecosystem that must be addressed. **(Public Comments-48.18)**

Comment 3: The DEIS should include a detailed function and values evaluation of the aquatic resources that are being impacted and should identify potential mitigation opportunities to fully offset aquatic impacts identified. **(Agency Comments-4.03)**

Comment 4: How will the proposed project affect compliance with the state's narrative water quality standards? **(Public Comments-48.20; 53.14, 20, 24)**

Comment 5: The surface area, volume, and salinity of the Great Salt Lake vary considerably with weather conditions. Assessment of conditions for wildlife, water quality, and economic and recreational values should consider the extreme conditions—periods of high and low lake volume—rather than the average conditions. **(Agency Comments-3.02; Public Comments-1.02; 26.03; 29.01; 32.04; 48.10, 55, 75-76; 53.10)**

Comment 6: The Corps must base its analysis on current maps that depict all existing dike structures throughout the lake. **(141.104; 144.10)**

Comment 7: The Corps must base its analysis on up-to-date information of the existing condition of the lake. **(141.105)**

4.3 Determination of Secondary and Cumulative Effects

Comment 1: The scope and magnitude of the project may make it difficult to distinguish primary, secondary, and cumulative effects. How will the DEIS and 404 permitting process address secondary and cumulative impacts? **(Preliminary Issues-15; Public Comments-48.42)**

Comment 2: To address cumulative impacts, the Corps must initially establish the geographical area in which cumulative impacts are to be considered. The geographic scope of the cumulative analysis will vary depending on the value to migratory birds, water quality, the aquatic ecosystem, and other relevant values. **(Public Comments-48.16)**

Comment 3: The Corps' cumulative analysis must be based on a pre-determined geographical area. **(141.106)**

Comment 4: The Corps should analyze how much the two project areas have already been altered and how much they deviate from, or have already lost of, their wetland and aquatic ecosystem characteristics, and what impact the further Proposed Action will have on these characteristics. **(144.43)**

Comment 5: Cumulative impacts analysis should explore the placement of the Proposed Action and its associated impacts in context with "plan trend" future environment conditions. **(A3.13)**

Comment 6: Cumulative impact of railroad causeway impacts, Kennecott increasing selenium discharges, and proposed ponds. **(94.01)**

Comment 7: The Corps must consider the impact of drought, including drought induced by climate change. **(141.52, 88; 144.35)**

Comment 8: The Corps must consider the cumulative loss of wetlands and other ecosystem components that help to maintain or improve water quality. **(141.55)**

Comment 9: To adequately and effectively determine the individual, cumulative, and indirect impacts of the Proposed Action on the lake's resources, the Corps must base its analysis on the total annual volume of water to be used by all industries, not just the Proposed Action, drawing water from the lake. **(141.62, 70; 144.35)**

4.4 Record of Decision and Permitting Issues

Comment 1: Coordination with BLM: Increased vehicle traffic on BLM lands adjacent to the proposed Clyman Bay expansion ponds. Will activities related to the proposed expansions result in damage to existing improved and unimproved roads, widening of roads, or the creation of

new roads or construction staging areas? If so, these kinds of activities must be permitted through a right-of-way issued by the BLM. **(Agency Comments-1.01)**

Comment 2: Coordination with BLM: Removal of mineral materials for fill tends to be a major impact to the land surface, resulting in increased probability of erosion and loss of wildlife habitat. Any use of mineral materials from BLM-managed public lands for fill must be purchased from BLM under a mineral material sales contract. **(Agency Comments-1.02)**

Comment 3: Coordination with Utah Division of Oil, Gas, and Mining: How would any new lease nomination fit within a possible change in the 1996 Mineral Lease Plan? Coordination with Utah Division of Oil, Gas, and Mining is also necessary; after the 404 permit is issued, a revision must be made to the Division's mining and reclamation plan. **(Preliminary Issues-17; Agency Comments-2.01)**

Comment 4: Coordination with Utah Division of Forestry, Fire, and State Lands: Do the proposed alternatives that affect lands below the meander line follow the Great Salt Lake Comprehensive Management Plan and the Great Salt Lake Mineral Leasing Plan? **(Agency Comments-6.01)**

Comment 5: Any changes to GSLM's current operation would likely constitute an amendment or revision to their mining and reclamation plan on file with the Utah Division of Oil, Gas, and Mining. The amended mining and reclamation plan needs to be submitted, reviewed, and approved before the solar pond expansion can be implemented, including adjustments to the reclamation surety. **(A2.18)**

Comment 6: The Utah Mined Land Reclamation Act requires reclamation of mined areas, so methods to prevent permanent adverse impacts to the pond areas need to be analyzed. **(A2.10)**

Comment 7: A mining permit or permit amendment may be necessary to obtain the fill material needed. **(A2.16)**

Comment 8: The proposed SOP processing plant at US Magnesium may need to be permitted under the Utah Mined Land Reclamation Act and should be considered a connected action. **(A2.17)**

Comment 9: What water quality permits are currently held by GSLM? **(141.113)**

Comment 10: The Corps should address why it is not considering all associated permits, such as air quality permits. **(141.112)**

4.5 Modeling

Comment 1: EPA's review of the DEIS will focus on how well project impact models are calibrated using recently acquired empirical data. All assumptions within the models that drive their predictive algorithms will need to be made explicit. **(A3.07)**

Comment 2: The EIS should use a hydrologic model to evaluate change in water movement and availability within the affected ecosystems as caused by solar pond placement and operation. **(A3.05)**

5.0 REFERENCES

[BRAC] Blue Ribbon Advisory Council on Climate Change. 2007. Climate Change and Utah: The Scientific Consensus. Appendix A of the Council's Report to Governor Jon M. Huntsman, Jr., October 3. Available at: http://www.deq.utah.gov/BRAC_Climate/final_report.htm. Accessed: 4/18/08.

[IPCC] Intergovernmental Panel for Climate Change. 2007. Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available at: http://ipcc-wg1.ucar.edu/wg1/wg1-report.html. Accessed: 4/18/08.

Steenburgh, W.J. 2008. Professor and Chair, Department of Meteorology, University of Utah. Personal communication with Wes Thompson of BIO-WEST, Inc., Logan Utah, regarding factors contributing to lake-effect storms of the Great Salt Lake and regarding how climate change may impact the intermountain west and the Great Salt Lake in the next 30-50 years. 4/14/08.

Steenburgh, W.J., Halvorson, S.F., and Onton, D.J. 2000. Climatology of lake-effect snowstorms of the Great Salt Lake. Monthly Weather Review, 128:709-727.

Halvorson, S.F. 1999. Climatology of lake-effect snowstorms of the Great Salt Lake. M.S. Thesis, University of Utah.

Held, T., Rivasplata, T., Bogdan, K., Rimpo, T., and Walter, R. 2007. Addressing climate change in NEPA and CEQA documents. Industry whitepaper prepared by the ICF Jones & Stokes Climate Change Focus Group, August. Available at: http://www.climatechangefocusgroup.com/index.html. Accessed: 4/18/08.

APPENDIX A

PRELIMINARY ISSUES

PRELIMINARY ISSUES
GSLM PROPOSED EVAPORATION PONDS EXPANSION PROJECT
March 13, 2007

Issues were derived during a preliminary issues meeting with the Interagency Team that consisted of representatives of the US Army Corps of Engineers, U.S. Fish and Wildlife Service (FWS), Utah Division of Wildlife (DWR), Utah Division of Forestry, Fire and State Lands (FFSL), Utah Geologic Survey (UGS), and U.S. Geologic Survey (USGS). Subsequent issues were derived in a meeting with the Environmental Protection Agency (EPA) representative. Further, a preliminary meeting was held with representatives from three environmental groups with very strong interest in the Great Salt Lake.

PRELIMINARY INTERAGENCY ISSUES

Clyman Bay

Agency Issue 1. Would any change in saline density from pond expansion in the North Arm affect flow and salinity in the South Arm. If saline densities decreased, would it reduce deep brine layer in the South Arm. ***This issue is very relevant from indirect or secondary impacts perspective.*** PL-1

Preliminary information to resolve issue. UGS has water chemistry data since 1996 from 3 stations in North Arm. UGS also has long term water chemistry data for numerous locations in the South Arm.

The team thought that any potential salt depletion could be established through an assessment based on expected extraction. A simple salt balance equation based on GSLM extraction and existing salinity and volume of North Arm.

Agency Issue 2. If there is a salinity change, could selenium or mercury metals be freed and become contaminants within the productive South Arm food chain? ***This issue is somewhat relevant from indirect or secondary impacts perspective.*** PL-2

Preliminary information to resolve issue. See Issue 1.

Agency Issue 3. Would a new pond impact White Pelican nesting colony on Gunnison Island due to dike construction? The proposed dikes would be at least 3 miles from the island. Is this sufficient distance so that construction activities would not disturb nesting birds? Noise levels over high density water may not diminish as rapidly as over other terrain. ***This issue has high significance based on Gunnison Island is one of three most important pelican nesting colonies in the interior US.*** PL-3

Preliminary information to resolve issue. DWR has annual data on White Pelican nesting on Gunnison Island. This could assist in correlating previous disturbance on nesting activity.

Agency Issue 4. Would new dikes act as predator conduits to island? Predators could use new dikes to get closer to Gunnison Island and could they walk to island during low years. ***This issue has high significance based on Gunnison Island is one of three most important pelican nesting colonies in the interior US, although likelihood of impact is small.*** PL-4

Preliminary information to resolve issue. It was noted that the bathymetric contours for this area show that bottom contours between the proposed dike and the island are at 4193 ft or greater. Even at current low lake level of about 4197, depth would be 4 ft and should act as a barrier to predator access. The lowest recorded historic lake elevation is 4191 ft. If the lake level is ever reduced to 4193 ft, predators could access Gunnison Island from any place along the shoreline. Therefore this is not considered a substantial issue. The issue of depth based on contours will be verified.

Agency Issue 5. Does the shoreline provide habitat for shorebirds or provide habitat for a substantial small mammal prey base? Of particular concern would be the uncommon Snowy Plover. ***Because of the special status of snowy plovers, this issue is signficant, though the likelihood of bird occurrence is small.*** PL-5

Preliminary information to resolve issue. Although literature tends to indicate that the western shoreline does not provide substantial shorebird habitat, it was determined important to obtain data through ground surveys. BIO-WEST will conduct shorebird surveys of the shoreline inundated by the proposed expansion pond at the south end. BW will also delineate the wetlands in this area. This will provide information for permitting and also habitat considerations. Surveys will be conducted this spring (May 2007).

Agency Issue 6. At Clyman Bay, would construction of the proposed expansion pond, especially Dolphin Island Pond, affect wildlife use in uplands or wetlands adjacent to the west side of the proposed pond. Concern was expressed that there could be disturbance or loss of habitat or disturbance to raptor nesting. ***Although relevant, the issue is not highly significant as no construction is anticipated in the near vicinity.*** PL-6

Preliminary information to resolve issue. BIO-WEST will investigate the shoreline to determine if any nesting or use occurs adjacent to this west end. The investigation will not be a full survey, rather a general on-site evaluation. The BLM will also be consulted to determine potential issues and information for this area, as they are the land managers of the uplands adjacent to the project area. Investigation to be done this spring (May 2007).

Bear River Bay

<u>Agency Issue 7.</u> Would maintenance flushing of the new pond at Bear River Bay affect existing water quality. Would flushing mobilize heavy metals or other contaminants precipitating in the ponds. Also would flushing have an effect on salinity and salinity discharge into South Arm? ***This issue is very relevant from indirect or secondary impacts perspective. It is not anticipated that flushing will increase heavy metal concentrations.*** PL-7

Preliminary information to resolve issue. Prior to the termination of 2007 winter flushing, BIO-WEST collected water samples at the two separate ponds currently being flushed. Water samples were also taken at the Bear River intake. Two separate sets of samples were taken. If deemed necessary, this will be supplemented during next winter, and may need to include the Clyman Bay ponds.

<u>Agency Issue 8.</u> The Bear River Bay between Promontory Point and GSLM ponds is a very important area for molting geese. Up to 10,000 molting subadults may occur. The area appears to be traditional for non breeding geese to molt. Would a new evaporation pond affect this use? ***Because of the traditional use of the area when geese are very vulnerable, this is a significant issue.*** PL-8

Preliminary information to resolve issue. Obtain information from DWR on waterfowl use of Bear River Bay, although data may not provide exact locations of use. BIO-WEST will supplement the data with aerial surveys focusing on numbers and location. Aerial surveys to be done in June 2007.

<u>Agency Issue 9.</u> Other water birds use open Bear River Bay throughout the year for feeding/loafing. DWR studies have shown that the Bear River Bay is very important for water bird use. What conditions lead to this use, and would the water bird use be affected by the large 8,000-acre impoundment. ***Because of the documented high avian use of Bear River Bay, and the Great Salt Lake's hemispheric and local importance, this is a very significant issue and may be the paramount issue.*** PL-9

Preliminary information to resolve issue. The 1997-2001 GSL Water Bird Survey provides information on use. Also DWR is conducting another five year study of GSL Water Birds by John Luft. The data from these long-term studies will be used as basis for evaluation. However, this data does not provide information on where the use occurs in Bear River Bay. BIO-WEST will supplement the existing data with extensive aerial surveys during the coming year focusing on species, numbers and location. Data will be collected for migrating water bird use and breeding bird use. BIO-WEST will conduct monthly aerial surveys to document exact location of use. Surveys will commence in April and extend through October 2007.

PRELIMINARY ENVIRONMENTAL STAKEHOLDER ISSUES

Clyman Bay

Stakeholder Issue 1. Breeding snowy plovers disperse to other shoreline areas with springs or fresh water discharges. If such discharges occur along the shoreline of the proposed ponds, would construction and operations affect plover use. ***This is same as Agency Issues 5 and 6.*** PL-10

Stakeholder Issue 2. Gunnison Island is very important to American white pelicans for nesting. It is the only nesting location on GSL for pelicans, and is considered on of the three largest nesting colonies in western US. The value of Gunnison Island is its isolation. This provides buffering from disturbance and protects the colony from mammalian predators. Activities that substantially reduce or remove this isolation could eliminate the pelican population. ***This is the same as Agency Issues 3 and 4.*** PL-11

Bear River Bay

Stakeholder Issue 3. Bear River Bay is very important to a number of different avian groups that utilize open water. Among species mentioned were American white pelican, Canada goose (critical molting), as well as others. ***This is the same as Agency Issues 8 and 9.*** PL-12

Stakeholder Issue 4. There is a concern that a large impoundment could constrain continued fresh water exchange between Willard Spur and Bear River Bay. Willard Spur is considered extremely important to avian communities providing wetland habitats as well as open water. Would new pond affect water flow between the two areas? Fresh water exchange may provide opportunities for maintenance of gizzard shad and carp populations that provide prey for piscivorous birds. PL-13

Preliminary information to resolve issue. No information is known. BIO-WEST will evaluate flow releases from all points of diversion including Willard Bay and Bear River through the refuge. Site evaluations will also be conducted under various water release scenarios and at different water surface elevations to determine such connectivity. If necessary, contours will be surveyed at the connection between Bear River Bay and Willard Bay to help ascertain constraints. ***This issue has moderate significance and it will be difficult to answer conclusively.***

Stakeholder Issue 5. Would new pond flushing create nutrient loading at Bear River Bay to the extent it would have an ecological affect. It was mentioned that there is information on nutrient loading for GSL and Theron Miller may have information. ***This is the same as Agency Issue 7. In addition, nutrient loading will be evaluated as part of water quality evaluations.*** PL-14

General Issues

Stakeholder Issue 6. It is very important that the NEPA evaluations and documentation are done thoroughly to avoid legal problems, such as Legacy Highway. Lynn described the need to describe and evaluate the No Action Alternative. She focused on the need to comprehensively assess secondary impacts. Lynn stated this was the main fault of Legacy Highway document - it didn't provide the full disclosure of secondary impacts. For this project, Lynn mentioned that secondary impacts may occur in North Arm, South Arm or both. PL-15

Preliminary information to resolve issue. BIO-WEST is proficient in completing the NEPA process. All alternatives will be identified and assessed for practicability. Secondary impact issues have been identified for water quality issues and avian use and productivity. These will be assessed based on data collected.

Stakeholder Issue 7. The GSL ecosystem is very sensitive to water diversions that limit inflow of fresh water and water quality. Would the project affect availability of fresh water. PL-16

Preliminary information to resolve issue. No water diversions are expected so this is not an issue. BIO-WEST will evaluate secondary impacts to water quality in the South Arm and Bear River Bay as described under Agency Issues 1,2, and 7. In addition, BIO-WEST will initiate an evaluation of current and expected water quality conditions in the Bear River Bay based on existing data and limited sampling.

Stakeholder Issue 8. How would any new lease nomination fit within a possible change in the 1996 Mineral Lease Plan that would open such lease nominations up to public discussion. Would the proposed lease nomination be grandfathered or included in new process. PL-17

Preliminary information to resolve issue. GSLM has submitted a lease nomination to the State and will abide by whatever process the State requires. A discussion was held regarding the commitments that will be required prior to any activation of a lease. This will include the commitments in any regulatory permits including the Section 404 permit (wetlands). An approved wetland permit will require the appropriate NEPA documentation, which is currently believed to be an EIS. This NEPA process will provide ample opportunities for public and stakeholder participation.

PRELIMINARY EPA ISSUES

EPA Issue 1. A well defined purpose for project must be prepared to focus the proposed action and provide foundation for determining practicable alternatives. PL-18

EPA Issue 2. Determination of alternatives must look at non-water dependent strategies to determine their practicability. Practicability depends on logistics, available technology, and cost. In reality logistics and technology often come down to costs. When evaluating practicability, GSLM must be able to explain it based on these 3 items. It is understood that much of GSLM PL-19

financial information is privileged and cannot be publicly disclosed. This can be accommodated as evaluations proceed.

EPA Issue 3. The scope of project must be determined, particularly the life of project. Is the life of the project the extent of a contract to obtain potassium chloride? Is it the life of the dikes built without need for another 404 permit for repair/maintenance? Is it the life of the functional evaporation of the ponds and salt production? ***EPA has preliminarily stated that life of the project is the life of the dikes. I have not received a response from them regarding regular maintenance as part of life.***	PL-20
EPA Issue 4. Is it feasible to evaluate and permit the proposed west ponds separately from the proposed east pond. It appears problematic separating the east pond proposal from west pond proposal, though there may be independent utility. It is likely best to consider the entire scope within the subsequent evaluations and documentation necessary for Section 404 permit.	PL-21
EPA Issue 5. Based on size and extent of the project, the project should proceed as an EIS. The issues appear to be focused on water quality and avian wildlife.	PL-22

OTHER PRELIMINARY ISSUES

Issue 1. Would the proposed project adversely affect any Cultural Resource (historic, archaeological, Native American).	PL-23

Resolution. BIO-WEST will conduct a cultural clearance of potentially impacted areas. This will likely be restricted to Clyman Bay where a new dike will be constructed on existing mud flats and the new areas of inundation. This needs to be determined by Corps and State Historic Preservation Officer.

Issue 2. Shrimp harvesters will likely have concern over water quality and affect on brine shrimp production.	PL-24

Resolution. This is anticipated to be addressed in water quality and circulation evaluations as well as further participation with stakeholders.

Issue 3. Waterfowl hunters at Willard Spur, Bear River Wildlife Refuge, Harold Crane Waterfowl Management Area, and private duck clubs may have concerns regarding access and affect on waterfowl.	PL-25

Resolution. Extent of issue is unknown, but can likely be addressed under the Agency Issues described above.

APPENDIX B

FORMAL SCOPING MATERIALS

included in the request for Office of Management and Budget approval of the information collection request; they will also become a matter of public record.

Dated: October 26, 2007.

Peg Rosenberry,

Director, Office of Grants Management .

[FR Doc. E7–21529 Filed 10–31–07; 8:45 am]

BILLING CODE 6050–$$–P

DEPARTMENT OF DEFENSE

Department of the Air Force

Announcement of IS–GPS–800 Interface Control Working Group (ICWG) Follow-On Meeting

AGENCY: Department of the Air Force.

ACTION: Meeting notice.

SUMMARY: This notice informs the public that the Global Positioning Systems Wing will be hosting a follow-on meeting to the Public ICWG that occurred on 25 Sept 2007 at the ION GNSS Conference in Ft. Worth, TX. The meeting will take place on 19 Nov 2007 at the SAIC Facility in El Segundo and will address the action item to review a ''tracked changes'' version of the IS–GPS–800. The meeting will consist of a line-by-line review and discussion of all L1 MBOC spreading codes and L1 bandwidth augmentation changes within the document. A tracked change ''was/is'' version of the document can be found at the following address for review: *http://www.losangeles.af.mil/library/factsheets/factsheet.asp?id=9364.* To make additional comments, please open the ''Comment Form Draft IS–GPS–800'' on the Web site and e-mail comments to Thomas Davis and Capt Garrett Knowlan by 5 Nov 2007 (contact info below). For those who would like to attend and participate in this meeting, you are requested to register by 14 November 2007. Please send the registration to *thomas.davis.ctr@losangeles.af.mil* and provide your name, organization, telephone number, address, and country of citizenship. Foreign nationals must have their passports available on the day of the meeting or admittance will be denied. The parking lot can be entered via Sepulveda Blvd or Grand Ave. The outside parking lot is available for all cars, but the underground parking structure is only for those with monthly parking passes. Parking validation is provided.

DATES: Monday, 19 November 2007, 8 a.m.–4 p.m., located at SAIC, El Segundo, 300 N. Sepulveda, Suite 3000, El Segundo, CA 90245.

FOR FURTHER INFORMATION CONTACT: Thomas Davis, *thomas.davis@linquest.com*, 1–310–416–8440, or Captain Michael Whiting, *Michael.Whiting@losangeles.af.mil*, 1–310–653–3936.

Bao-Anh Trinh,

Air Force Federal Register Liaison Officer.

[FR Doc. E7–21499 Filed 10–31–07; 8:45 am]

BILLING CODE 5001–05–P

DEPARTMENT OF DEFENSE

Department of the Air Force

Air Force Performance Review Boards

AGENCY: Department of the Air Force.

ACTION: Notice.

SUMMARY: Notice is hereby given of the appointment of members of the Air Force Performance Review Boards.

SUPPLEMENTARY INFORMATION: Section 4314(c)(1) through (5) of Title 5, U.S.C., requires each agency to establish, in accordance with the regulations prescribed by the U.S. Office of Personnel Management, one or more SES performance review boards. The purpose of the Performance Review Board is to review records on all Air Force SES, DISES, SL and ST members and to make recommendations to the appointing authority on performance management issues such as appraisals, bonuses, and pay level increases.

The following have been designated as members of the Air Force Performance Review Boards:

General Bruce Carlson, Commander, AF Materiel Command—Board President—Lieutenant General Rod Bishop, Commander, Third Air Force.

Mr. David Tillotson, Deputy Chief of Staff for Warfighting Integration.

Mrs. Barbara Westgate, AF Materiel Command Executive Director.

Mr. Timothy Leyland, Assistant Deputy Chief of Staff, Manpower & Personnel.

Mrs. Patricia Young, Deputy to the Commander, Military Surface Deployment and Distribution Command.

Mr. Richard Gustafson, Deputy Assistant Secretary (Financial Operations).

Mr. Steven Cantrell, Director, Analysis & Estimates, DCS Intelligence, Surveillance and Reconnaissance.

Mr. Michael Rhodes, OSD ODAM WHS, Non-Air Force SES Senior Board Member.

Mrs. Mary Lacey, NSPS Program Executive Office, Non-Air Force SES Senior Board Member.

Mr. John Salvatore, OSD OUDSI, Non-Air Force DISES Board Member.

FOR FURTHER INFORMATION CONTACT: Major Therese Schuler, Air Force Senior Executive Management Office, AF/DPSS, 1040 Air Force Pentagon, Washington, DC 20330–1040, (703) 695–8040.

Bao-Anh Trinh,

Air Force Federal Register Liaison Officer.

[FR Doc. E7–21494 Filed 10–31–07; 8:45 am]

BILLING CODE 5001–05–P

DEPARTMENT OF DEFENSE

Department of the Army; Corps of Engineers

Intent To Prepare a Draft Environmental Impact Statement (DEIS) for Great Salt Lake Minerals Corporation's Solar Evaporation Pond Expansion Project Within the Great Salt Lake, Box Elder County, UT

AGENCY: Department of the Army; U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: In accordance with the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers (Corps), Sacramento District, will prepare a draft Environmental Impact Statement (DEIS) for Corps authorization actions for the proposed Great Salt Lake Minerals Solar Evaporation Ponds Expansion project. The overall project purpose is to expand extraction capability for potassium at the Great Salt Lake Mineral Corporation's facilities. The proposed expansion would add approximately 33,000 acres of solar evaporative ponds, impacting approximately 30,713.75 acres of waters of the United States, and reducing the need to import raw potassium from other sources. The DEIS will address impacts such as wildlife habitat, water quality, Great Salt Lake water elevations, wetlands, hydrology, cultural resources, transportation, endangered species and industry.

DATES: The projected date for public release of the DEIS is October 2008. Three public scoping meetings will be held. The first scoping meeting will be held on November 7, 2007 from 5–9 p.m. The second public meeting will be on November 8, 2007 from 5–9 p.m. The third meeting will be held on November 14, 2007 from 5–9 p.m.

ADDRESSES: The November 7 meeting will be held at South Davis Junior High School, 298 West 2600 South, Bountiful, Utah. The November 8 meeting will be held at the Ogden Nature Center, 966 W.

12th Street, Ogden, Utah. The November 14 meeting will be held at the Airport Inn Hotel, 2333 W. North Temple Street, Salt Lake City, Utah. Written comments may be mailed to Mr. Jason Gipson, 533 West 2600 South, Suite 150, Bountiful, Utah 84010. All comments must be received on or before December 2, 2007.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the DEIS should be directed to the Corps project manager, Mr. Jason Gipson at 801–295–8380 x14, or e-mail at *jason.a.gipson@usace.army.mil.* Please refer to identification number 200700121.

SUPPLEMENTARY INFORMATION: Great Salt Lake Minerals Corporation (GSLM) has applied for Department of the Army authorization under Section 404 of the Clean Water Act. The project as proposed may also require other Federal, State and local authorizations including Utah State Public Lands Lease Agreements.

Great Salt Lake Minerals Corporation currently operates approximately 43,000 acres of evaporative ponds located on the east and west shores of the Great Salt Lake. A 21,000-acre evaporation facility is located on the west shore of the North Arm of the Great Salt Lake and a 22,000-acre evaporation facility is located on the east shore of the Bear River Bay. The existing solar evaporation ponds facilities are located within the Great Salt Lake, i.e., the ponds are located below 4205 mean sea level, which is below the high water mark of the Great Salt Lake. These facilities allow the Corporation to extract about one-half of the potassium needed in their production of potassium sulfate. The company draws naturally occurring brine from the lake into shallow ponds and allows solar evaporation to produce sulfate of potash, as well as salt and magnesium chloride minerals. Sulfate of potash is a specialty fertilizer that improves the yield and quality of high-value crops such as fruits, vegetables, tea, tree nuts and turf grasses. The Great Salt Lake facility has operated on the lake for 40 years. At present, the remainder of the potassium is imported from other sources. The proposed expansion of the solar ponds will allow Great Salt Lake Minerals to reduce or discontinue their reliance on imported potassium.

The applicant is proposing to construct three additional solar evaporation ponds totaling approximately 33,000 acres. The proposed project includes an 8,000-acre pond on the east side of the Great Salt Lake in the Bear River Bay. Brine would be pumped to and from the new pond with existing pump stations; however, the capacity of these pump stations would be increased proportional to the new pond acreage. Additional feed brine for this new pond would come from the North Arm of the Great Salt Lake (Gunnison Bay), flowing through existing east side ponds.

In addition, on the west side of the lake, two new solar ponds would be added to the existing west side complex, an 18,000-acre Dolphin Island expansion pond and a 7,000-acre pond at the southern end of Clyman Bay between the Union Pacific Railway and several existing ponds. A new feed canal into the lake and a new pump station would be constructed on the north end of the proposed Dolphin Island pond. Diesel driven pumps, similar to those currently in use, would pump brine from the new feed canal to the new pond. Existing pumps would be used to pump brine from the new pond to an existing pond. The total 25,000-acre pond expansion on the west side would increase the concentration of brine transferred to an existing gravity-flow trench for transport to the east ponds in the Bear River Bay.

Dikes would be built to accommodate the pond expansion and impound the waters of the respective areas. On the east side of the lake approximately 540,000 cubic yards of fill would be discharged into Bear River Bay to create the dikes. On the west side of the lake, dike construction would require approximately 900,000 cubic yards of fill to be discharged into open water in the vicinity of Clyman Bay.

The proposed project areas currently include saline open water, sporadically inundated playa lakebed, seasonally flooded playa, saline wetlands, rip-rapped dikes and sandy upland habitats. These areas are located adjacent to the existing evaporation pond facilities. The Corps of Engineers verified a delineation on October 10, 2007 which identified approximately 34,180.08 acres of waters of the United States, including 21.4 acres of saline wet meadow wetlands, 1,102.94 acres of seasonally inundated playa above the high water mark of the western side of the Great Salt Lake and 33,055.74 acres of seasonally or sporadically inundated playa lake bed below the high water mark of the Lake. The applicant asserts that approximately 30,713.75 acres of waters would be lost due to project construction under the proposed alternative.

The applicant has not proposed compensatory mitigation for project impacts. The determination of appropriate compensatory mitigation will be determined through public scoping and impact analysis of the EIS process.

The proposed project will not affect any Federally-listed threatened or endangered species, however, it may affect state-listed special status species. Once a habitat assessment of the areas has been completed, the Corps will consult with state and Federal wildlife agencies. The Corps will also consult with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act for properties listed or potentially eligible for listing on the National Register of Historic Places, as appropriate.

A number of on-site and off-site alternatives, including the no action alternative, will be evaluated in the DEIS in accordance with NEPA and the Section 404(b)(1) guidelines.

As part of the Corps 404 permitting process, three pre-application interagency meetings were held to provide information and identify issues and concerns. In addition, a meeting was held with local environmental organizations for the same purposes. Preliminary issues identified as part of this process include: Water quality, heavy metals, nutrient loading, fresh water exchange, changes in salinity, and brine shrimp habitat and economic issues. Additionally, potential avian impacts were identified to waterfowl, shorebirds, and raptors including the American white pelican, snowy plover, Canada goose, and others.

The above determinations are based on information provided by the applicant and upon the Corps' preliminary review. The Corps is soliciting verbal and written comments from the public, Federal, States and local agencies and officials, Native American tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. The Corps' public involvement program includes multiple opportunities for interested parties to provide written and oral comments. Affected Federal, State, local agencies, Indian tribes, and other interested private organizations and the general public are invited to participate.

Dated: October 24, 2007.

Michael S. Jewell,

Chief, Regulatory Branch, Sacramento District, Corps of Engineers.

[FR Doc. 07–5437 Filed 10–31–07; 8:45 am]

BILLING CODE 3710–EH–P

US Army Corps of Engineers®

The U.S. Army Corps of Engineers

Invites You to Attend
Public Information Meetings
on the

US Army Corps of Engineers®

Proposed 33,000 Acres Expansion of Solar Evaporation Ponds on the Great Salt Lake

Why: The Corps is conducting public scoping meetings in preparation of their environmental document. You are invited to learn about the project, view displays, meet project representatives, ask questions, and provide comments.

When And Where:

Wednesday November 7, 2007
Bountiful City – South Davis Junior High School, 298 West 2600 South

Thursday November 8, 2007
Ogden City – Ogden Nature Center, 966 West 12th Street

Wednesday November 14, 2007
Salt Lake City – Airport Inn Hotel, 2333 West North Temple

Format: Open house – come anytime between 5:00 p.m. and 9:00 p.m. on the appointed days. Brief informational presentations will be made at 6:00 p.m. and 8:00 p.m. at each event.

EXAMPLE OF PURCHASED NEWSPAPER AD FOR PUBLIC SCOPING MEETINGS

Ran in:

Salt Lake Tribune, November 4 and November 6, 2007.

Ogden Standard-Examiner, November 4 and November 6, 2007.

Deseret News, November 6, 2007.

U.S. Army Corps of Engineers

Public Information Meeting

on the

Proposed 33,000-acre Expansion of Solar Evaporation Ponds on the Great Salt Lake

Preliminary Information Packet

November 2007

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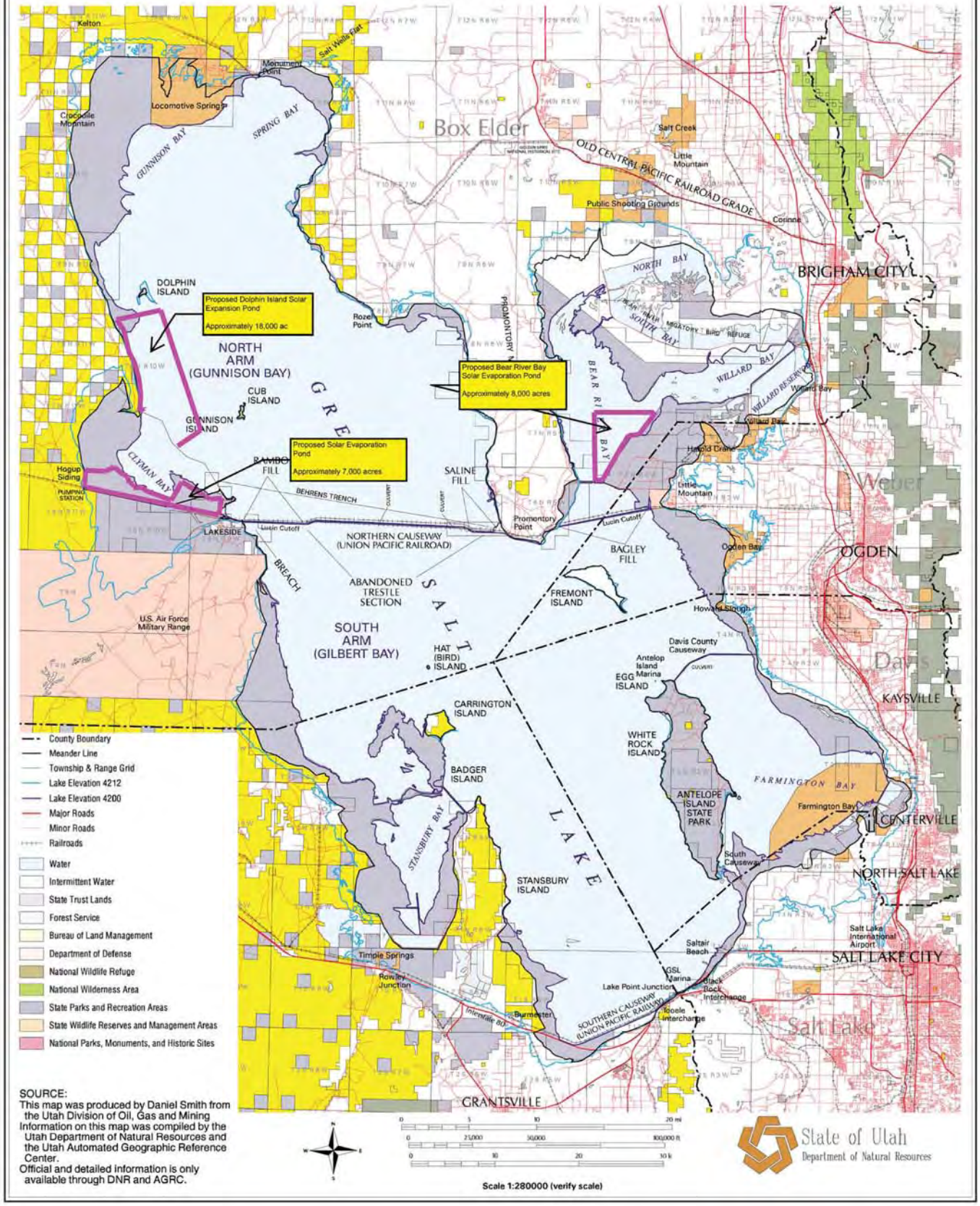
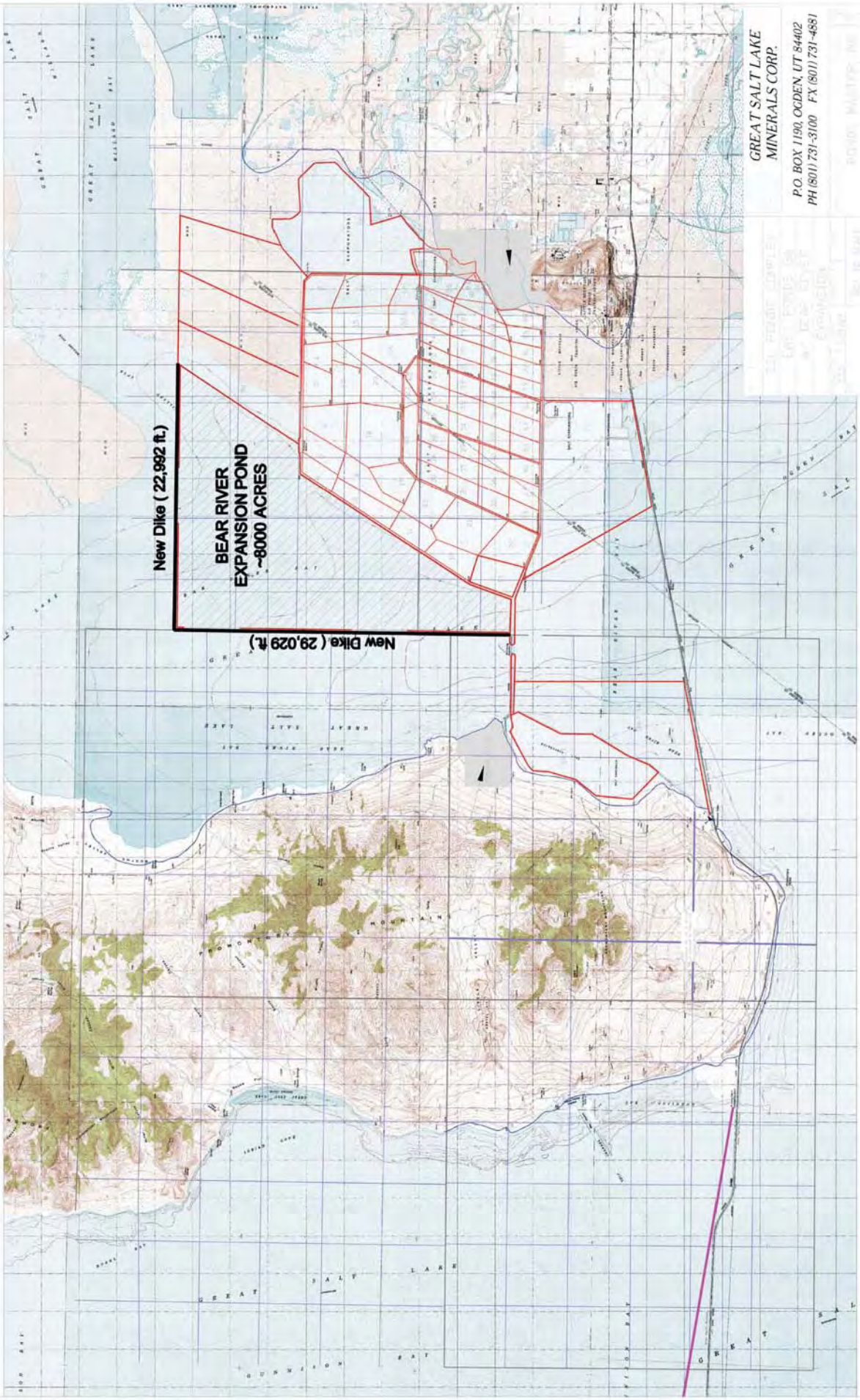
Great Salt Lake Location Map

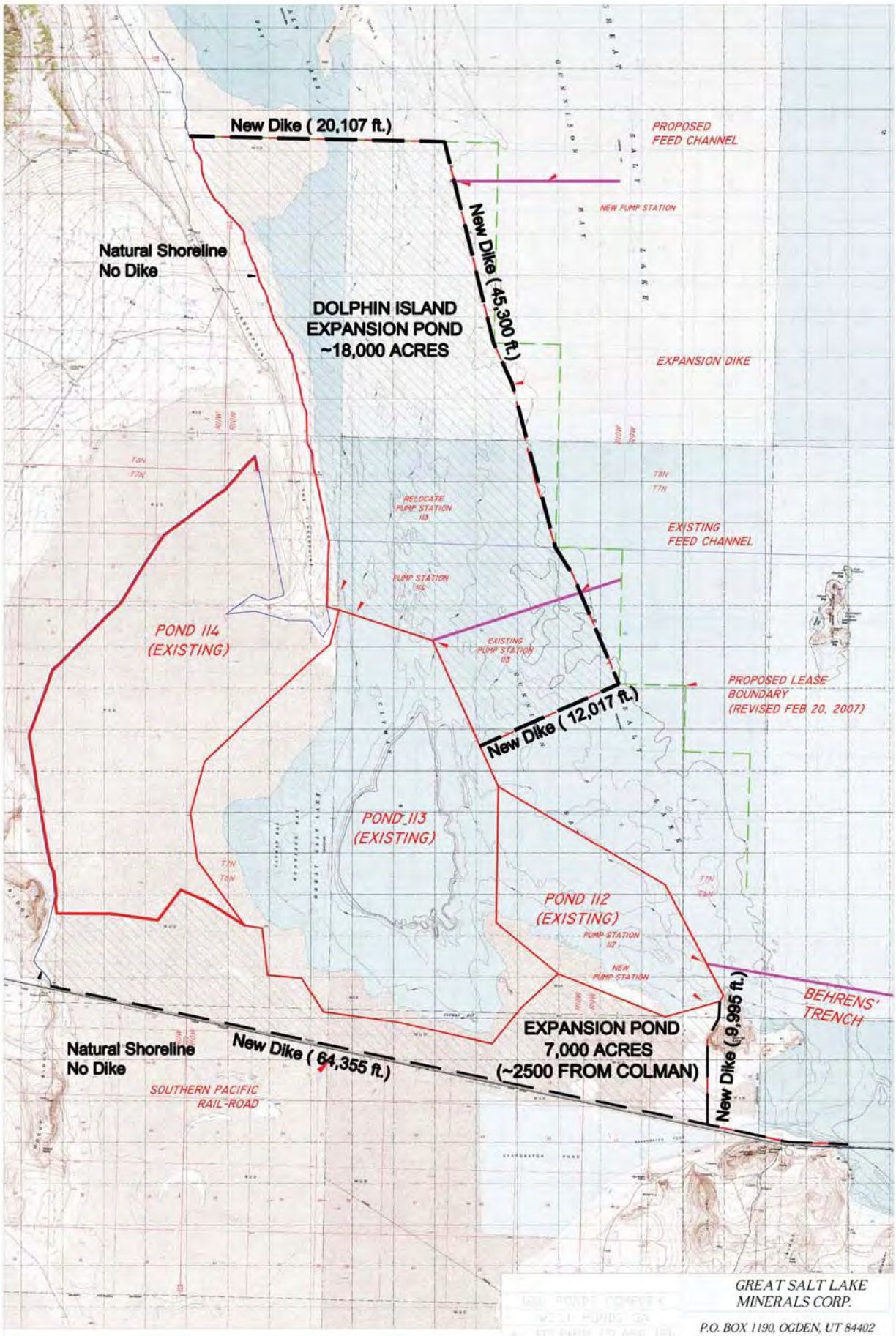
Plotted February 17, 2000



Planned Bear River Bay Solar Pond Expansion In Relation To Existing Ponds



Planned Clyman Bay Solar Pond Expansion In Relation To Existing Ponds



Public Notice

US Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Public Notice Number: SPK-2007-00121
Date: October 25, 2007
Comments Due: December 3, 2007
In reply, please refer to the Public Notice Number

SUBJECT: The U.S. Army Corps of Engineers, Sacramento District, (Corps) is evaluating a permit application to construct the Great Salt Lake Solar Evaporation Ponds Expansion Project, which would result in impacts to approximately 30,713.75 acres of waters of the United States, including wetlands, in or adjacent to the Great Salt Lake. This notice is to inform interested parties of the proposed activity, to provide notice that the Corps is preparing a draft Environmental Impact Statement, and will be conducting public scoping meetings, and to solicit comments. This notice may also be viewed at the Corps web site at http://www.spk.usace.army.mil/regulatory.html.

AUTHORITY: This application is being evaluated under Section 404 of the Clean Water Act for the discharge of dredged or fill material in waters of the United States and Section 401 for water quality certification.

APPLICANT: Corey Milne
Great Salt Lake Minerals Corporation
765 North 10500 West
Ogden, Utah 84404

LOCATION: The project sites are located in and adjacent to the Great Salt Lake, in

Sections 14-22 and 28-32, Township 6 North, Range 4 West;
Sections 5-7, Township 7 North, Range 4 West;
Section 12, Township 8 North, Range 11 West;
Sections 7-10, 15-22, 26-29 and 32-35, Township 8 North, Range 10 West;
Sections 2-5, 8-16 and 22-24, Township 7 North, Range 10 West;
Sections 1, 2, 11 and 12, Township 6 North, Range 11 West;
Sections 5-17, Township 6 North, Range 10 West;
Sections 7, 8, 17 and 18, Township 6 North, Range 9 West, Box Elder County, Utah.

This area can be seen on the Hogup Ridge North and Willard Spur USGS Topographic Quadrangles.

PROJECT DESCRIPTION: In accordance with the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers (Corps), Sacramento District, will prepare a draft Environmental Impact Statement (DEIS) for Corps authorization actions for the proposed Great Salt Lake Minerals Solar Evaporation Ponds Expansion project. The overall project purpose is to expand extraction capability for potassium at the Great Salt Lake Mineral Corporation's facilities. The proposed expansion would add approximately 33,000 acres of solar evaporative ponds, impacting approximately 30,713.75 acres of waters of the United States, and reducing the need to import raw potassium from other sources. The DEIS will address impacts such as wildlife habitat, water quality, Great Salt Lake water elevations, wetlands, hydrology, cultural resources, transportation, endangered species and industry.

DATES: The projected date for public release of the DEIS is October 2008. Three public scoping meetings will be held. The first scoping meeting will be held on November 7, 2007 from 5-9 pm. The second public meeting will be on November 8, 2007 from 5-9 pm. The third meeting will be held on November 14, 2007 from 5-9 pm.

ADDRESSESS: The November 7 meeting will be held at South Davis Junior High School, 298 West 2600 South, Bountiful, Utah. The November 8 meeting will be held at the Ogden Nature Center, 966 W. 12th Street, Ogden, Utah. The November 14 meeting will be held at the Airport Inn Hotel, 2333 W. North Temple Street, Salt Lake City, Utah. Written comments may be mailed to Mr. Jason Gipson, 533 West 2600 South, Suite 150, Bountiful, Utah 84010. All comments must be received on or before December 2, 2007.

SUPPLEMENTAL INFORMATION: Great Salt Lake Minerals Corporation currently operates approximately 43,000 acres of evaporative ponds located on the east and west shores of the Great Salt Lake. A 21,000-acre evaporation facility is located on the west shore of the North Arm of the Great Salt Lake and a 22,000-acre evaporation facility is located on the east shore of the Bear River Bay. The existing solar evaporation ponds facilities are located within the Great Salt Lake, i.e., the ponds are located below 4205 mean sea level, which is below the high water mark of the Great Salt Lake. These facilities allow the Corporation to extract about one-half of the potassium needed in their production of potassium sulfate. The company draws naturally occurring brine from the lake into shallow ponds and allows solar evaporation to produce sulfate of potash, as well as salt and magnesium chloride minerals. Sulfate of potash is a specialty fertilizer that improves the yield and quality of high-value crops such as fruits, vegetables, tea, tree nuts and turf grasses. The Great Salt Lake facility has operated on the lake for 40 years. At present, the remainder of the potassium is imported from other sources. The proposed expansion of the solar ponds will allow Great Salt Lake Minerals to reduce or discontinue their reliance on imported potassium.

The applicant is proposing to construct three additional solar evaporation ponds totaling approximately 33,000 acres. The proposed project includes an 8,000-acre pond on the east side of the Great Salt Lake in the Bear River Bay. Brine would be pumped to and from the new pond with existing pump stations; however, the capacity of these pump stations would be increased proportional to the new pond acreage. Additional feed brine for this new pond would come from the North Arm of the Great Salt Lake (Gunnison Bay), flowing through existing east side ponds.

In addition, on the west side of the lake, two new solar ponds would be added to the existing west side complex, an 18,000-acre Dolphin Island expansion pond and a 7,000-acre pond at the southern end of Clyman Bay between the Union Pacific Railway and several existing ponds. A new feed canal into the lake and a new pump station would be constructed on the north end of the proposed Dolphin Island pond. Diesel driven pumps, similar to those currently in use, would pump brine from the new feed canal to the new pond. Existing pumps would be used to pump brine from the new pond to an existing pond. The total 25,000-acre pond expansion on the west side would increase the concentration of brine transferred to an existing gravity-flow trench for transport to the east ponds in the Bear River Bay.

Dikes would be built to accommodate the pond expansion and impound the waters of the respective areas. On the east side of the lake approximately 540,000 cubic yards of fill would be discharged into Bear River Bay to create the dikes. On the west side of the lake, dike construction would require approximately 900,000 cubic yards of fill to be discharged into open water in the vicinity of Clyman Bay.

The proposed project areas currently include saline open water, sporadically inundated playa lakebed, seasonally flooded playa, saline wetlands, rip-rapped dikes and sandy upland habitats. These areas are located adjacent to the existing evaporation pond facilities. The Corps of Engineers verified a delineation on October 10, 2007 which identified approximately 34,180.08 acres of waters of the United States, including 21.4 acres of saline wet meadow wetlands, 1,102.94 acres of seasonally inundated playa above the high water mark of the western side of the Great Salt Lake and 33,055.74 acres of seasonally or sporadically inundated playa lake bed below the high water mark of the Lake. The applicant asserts that approximately 30,713.75 acres of waters would be lost due to project construction under the proposed alternative.

Alternatives. The applicant has not provided information concerning project alternatives. Other alternatives may develop during the review process for this permit application. All reasonable project alternatives, in particular those which may be less damaging to the aquatic environment, will be developed and analyzed during the preparation of the DEIS.

Mitigation. The Corps requires that applicants consider and use all reasonable and practical measures to avoid and minimize impacts to aquatic resources. If the applicant is unable to avoid or minimize all impacts, the Corps may require compensatory mitigation. The applicant has not proposed a mitigation plan at this time. The determination of appropriate compensatory mitigation will be determined through public scoping and impact analysis of the EIS process.

OTHER GOVERNMENTAL AUTHORIZATIONS: Under Section 401 of the Clean Water Act, water quality certification or a waiver is required from the State of Utah for this project. The Utah Division of Water Quality intends to issue certification, provided the proposed work will not violate applicable water quality standards. Projects are usually certified where the project may create diffuse sources (non-point sources) of wastes which will occur only during the actual construction activity and where best management practices would be employed to minimize pollution effects. Written comments on water quality certification should be submitted to Ms. Shelly Quick, Utah Division of Water Quality, 288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870, on or before **December 3, 2007**.

HISTORIC PROPERTIES: Based on the available information, cultural resources not are within the project's area of potential effect. If information regarding the impacts to Historic Properties is identified during the EIS process, the Corps will initiate consultation with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act, as appropriate.

ENDANGERED SPECIES: Based on available information the project will not affect any Federally-listed threatened or endangered species.

ESSENTIAL FISH HABITAT: The proposed project will not adversely affect Essential Fish Habitat (EFH) as defined in the Magnuson-Stevens Fishery Conservation and Management Act.

The above determinations are based on information provided by the applicant and our preliminary review.

EVALUATION FACTORS: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources.

The benefit, which reasonably may be expected to accrue from the described activity, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the described activity will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people. The activity's impact on the public interest will include application of the Section 404(b)(1) guidelines promulgated by the Administrator, Environmental Protection Agency (40 CFR Part 230).

The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SUBMITTING COMMENTS: Written comments, referencing Public Notice SPK-2007-00121 must be submitted to the office listed below **on or before December 3, 2007.**

Jason Gipson, Project Manager
US Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Email: jason.a.gipson@usace.army.mil

The Corps is particularly interested in receiving comments related to the proposal's probable impacts on the affected aquatic environment and the secondary and cumulative effects. Anyone may request, in writing, that a public hearing be held to consider this application. Requests shall specifically state, with particularity, the reason(s) for holding a public hearing. If the Corps determines that the information received in response to this notice is inadequate for thorough evaluation, a public hearing may be warranted. If a public hearing is warranted, interested parties will be notified of the time, date, and location. Please note that all comment letters received are subject to release to the public through the Freedom of Information Act. If you have questions or need additional information please contact the applicant or the Corps' project manager Jason Gipson, 801-295-8380 x 14, jason.a.gipson@usace.army.mil.

Attachments: 7 drawings

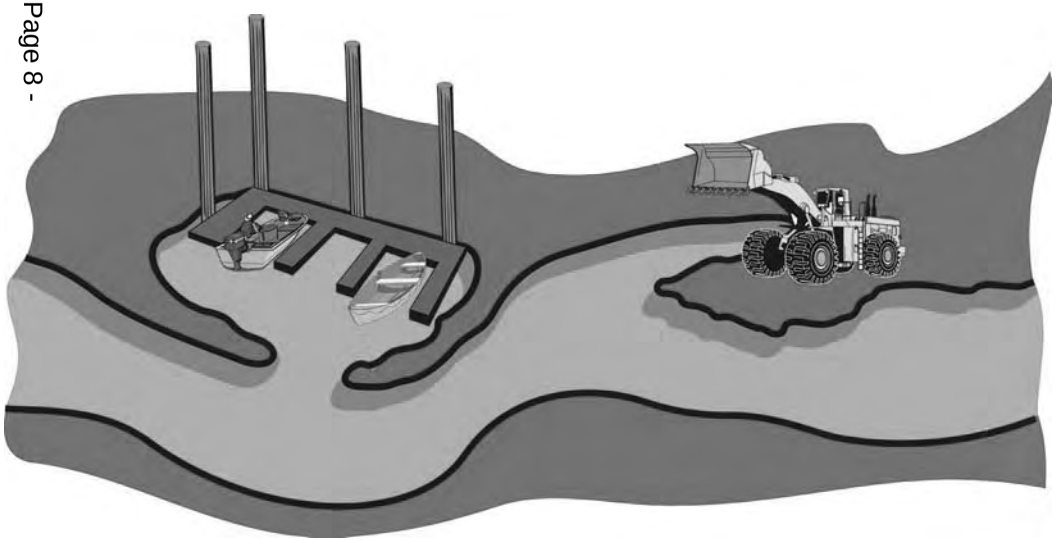
History

The U.S. Army Corps of Engineers has been involved in regulating certain activities in the nation's waters since 1890. Until 1968, the primary thrust of the Corps' regulatory program was the protection of navigation. As a result of several new laws and judicial decisions, the program evolved to one that considers the full public interest by balancing the favorable impacts against the detrimental impacts.

You Can Help

The understanding and support of the American people is vital to the success of this program. To protect our nation's water resources and assure their use and enjoyment for future generations, we must all join this vital effort. We ask your help in "passing the word" to others concerning the permit requirements outlined in this brochure and solicit your views and comments on better ways of attaining the goals of this program. Your comments, questions, and suggestions should be directed to one of our Regulatory Offices.

For additional information or to apply for a permit, please contact one of our Regulatory Offices or see our web site at ***http://www.spk.usace.army.mil/cespk-co/regulatory/***.



SPK BRO 360-1-12, MAY 04

US Army Corps of Engineers ®
Sacramento District

Permit Program

http://www.spk.usace.army.mil/cespk-co/regulatory/

Corps of Engineers Regulatory Program

Water is one of our nation's most valuable resources. It is becoming increasingly important that we protect the quality of our inland waters and wetlands for the use and benefit of future generations.

This brochure discusses the regulatory program of the U.S. Army Corps of Engineers: What it is, how it began, how it may affect you, and what you as a concerned American can do to help.

If you are planning work in a river, stream, lake, or wetand, a Corps permit may be required.

The program provides for the consideration of all concerns of the public (environmental, social, and economic) in the Corps' decision-making process to either issue or deny permits. As part of its responsibility to protect water quality, the Corps of Engineers Section 404 permit program extends to many areas that were not regulated prior to the Clean Water Act.

The purpose of the Clean Water Act is to insure that the physical, biological, and chemical quality of our nation's water is protected from irresponsible and unregulated discharges of dredged or fill material that could permanently alter or destroy these valuable resources.

What Work Requires a Permit?

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats, intake structures, and cable or pipeline crossings.
- Dredging and excavation.

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material in the waters of the United States, including wetlands. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the United States or adjacent wetlands.
- Site development fills for residential, commercial, or recreational developments.
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.
- Mining, channalization, ditching or, sediment removal which involves more than "incidental fall-back" of dredged material.

Who Should Obtain a Permit?

Any person, firm, agency (including governmental agencies) planning to work in Navigable Waters of the United States, or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps of Engineers. Permits, licenses, variances, or similar authorization may also be required by other Federal, State, and local statutes.

Waters of the United States

Waters of the United States include essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. "Wetlands" are areas characterized by growth of wetland vegetation (bulrush, cattails, rushes, sedges, willows, pickleweed, iodine bush) where the soil is saturated during a portion of the growing season or the surface is flooded during some part of most years. Wetlands include marshes, alpine wet meadows, vernal pools, playas, seasonally saturated depressions and similar areas.

The landward regulatory limit for non-tidal waters (in the absence of adjacent wetlands) is the ordinary high water mark. The ordinary high water mark is the line on the shores established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank: shelving; changes in the character of the soil: destruction of terrestrial vegetation: the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

Navigable Waters

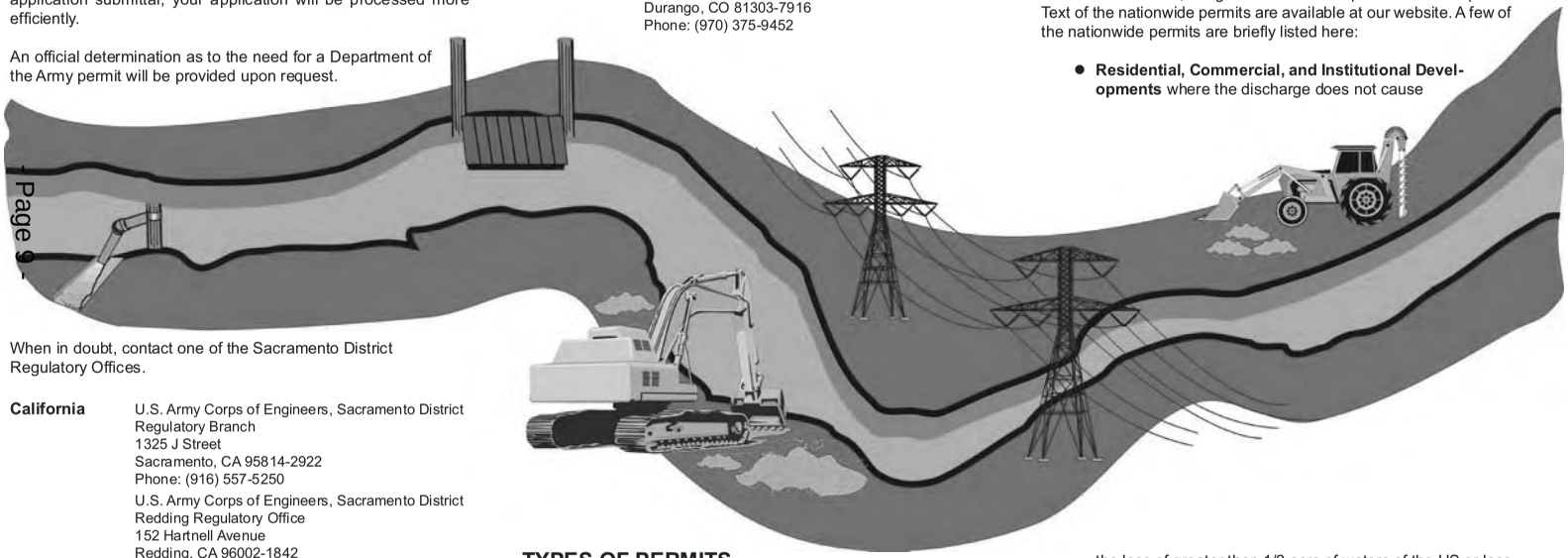
Navigable waters are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/ or Section 404 permits are required for construction activities in these waters. A complete list is available in the District Office and on our website at ***http://www.spk.usace.army.mil/cespk-co/regulatory/***.

Pre-Application Consultation

You are encouraged to contact the Sacramento District Corps of Engineers for proposed work in waters in this jurisdictional area (see map this side).

Exemptions, nationwide, regional and individual permit requirements will be reviewed. By discussing all information **prior** to application submittal, your application will be processed more efficiently.

An official determination as to the need for a Department of the Army permit will be provided upon request.



When in doubt, contact one of the Sacramento District Regulatory Offices.

California
U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
1325 J Street
Sacramento, CA 95814-2922
Phone: (916) 557-5250

U.S. Army Corps of Engineers, Sacramento District
Redding Regulatory Office
152 Hartnell Avenue
Redding, CA 96002-1842

Nevada
U.S. Army Corps of Engineers, Sacramento District
Nevada Regulatory Office
C. Clifton Young Federal Building
300 Booth Street, Room 2103
Reno, NV 89509-8126
Phone: (775) 784-5304

Utah
U.S. Army Corps of Engineers, Sacramento District
Intermountain Regulatory Section
533 West 2600 South, Suite 150
Bountiful, UT 84010
Phone: (801) 295-8380

U.S. Army Corps of Engineers, Sacramento District
St. George Regulatory Office
321 N. Mall Drive, Suite L-101
St. George, UT 84790-7314
Phone: (435) 986-3979

Northwestern Colorado
U.S. Army Corps of Engineers, Sacramento District
Grant Junction Regulatory Office
Wayne N. Aspinall Federal Building
402 Rood Avenue, Room 142
Grand Junction, CO 81501-2563
Phone: (970) 243-1199

U.S. Army Corps of Engineers, Sacramento District
Frisco Regulatory Office
310 W Main, Suite 202, P.O. Box 607
Kremmling, CO 80443-0607
Phone: (970) 724-9036

Southwestern Colorado
U.S. Army Corps of Engineers, Sacramento District
Durango Regulatory Office
278 Sawyer Drive #1
Durango, CO 81303-7916
Phone: (970) 375-9452

TYPES OF PERMITS

Individual Permits

Individual permits are issued following a full public interest review of an individual application for a Department of the Army permit. A public notice is distributed to all known interested persons. After evaluating all comments and information received, final decision on the application is made.

The permit decision is based on compliance with Section 404(b)(1) guidelines and the outcome of the public interest balancing process where the benefits of the project are balanced against the detriments. A permit will be granted unless the proposal is found to be contrary to the public interest or fails to meet the guidelines. Process time usually takes 60 to 120 days unless a public hearing is required, an environmental impact statement must be prepared, or compliance with other Federal laws Is required.

To apply for an individual permit, an application form along with plan and profile drawings must be submitted. The form Is available from our Regulatory Offices and on our web site at ***http://www.spk.usace.army.mil/cespk-co/regulatory/***.

Nationwide Permits

A nationwide permit is a form of general permit which authorizes a category of activities throughout the nation. These permits are valid only if the conditions applicable to the permits are met. If the conditions cannot be met, a regional or individual permit will be required. Text of the nationwide permits are available at our website. A few of the nationwide permits are briefly listed here:

- **Residential, Commercial, and Institutional Developments** where the discharge does not cause the loss of greater than 1/2 acre of waters of the US or loss of greater than 300 linear-feet of stream bed unless for intermittent streams written waiver is obtained. Advanced written notification is required if the discharge exceeds 1/10 acre of waters of the US, the discharge causes the loss of open waters, or the discharge causes the loss of greater than 300 linear-feet of intermittent stream bed.

- **Repair, rehabilitation, or replacement** of a structure or fill which was previously authorized and currently serviceable. The structure or fill must not be significantly changed.

- **Utility lines** placed across a waterway. Discharge of bedding and backfill material is permitted if bottom contours are not changed.

- **Single projects of less that 25 cubic yards** of fill or excavation. Piecemeal work is not authorized. Advance written notification is required.

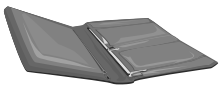
- **Bank stabilization** projects less than 500 feet long containing less than an average of one cubic yard of material per running foot. The activity must be necessary for erosion protection and may not exceed the minimum amount needed for erosion protection. Fill is not to be placed in wetland areas or in a manner that impairs water flow. Materials free of waste metal products and unsightly debris must be used and the activity must be a single complete, project.

- **Linear Transportation Projects** provided the discharge does not cause the loss of greater than l/2 acre of non-tidal waters or 1/3 acre of tidal waters. Advanced written notification is required if the discharge causes greater than 1/10 acre of waters or if the discharge occurs in a special aquatic site, including wetlands.

Regional permits are issued by the District Engineer for a general category of activities when (1) the activities are similar in nature and cause minimal environmental impact (both individually and cumulatively), and (2) the regional permit reduces duplication of regulatory control by State and Federal agencies.

Contact one of the Sacramento District Regulatory Offices, or see our website, for information regarding regional permits in your area.

Jurisdiction Review Process



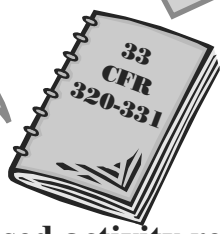
Wetland Delineation
or
Jurisdictional Request

Is the project in a Waters of the US?

No

No Permit Required…

Yes



Is proposed activity regulated?

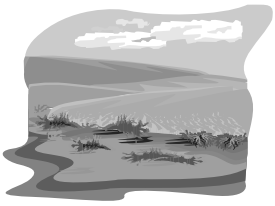
Yes

Submit Permit Application

No

No Permit Required…

Permit Application Review Process



Avoidance

Minimization

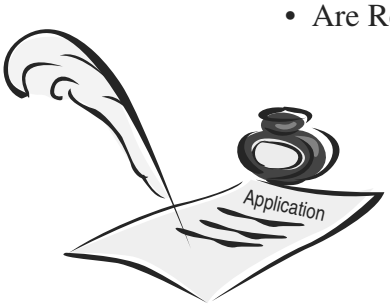
No avoidance

- Are individual and cumulative environmental impacts minimal?
- Is area of impact less than $^{1}/_{3}$ – ½ acre?
- Are Nationwide General Permit (NWP) criteria and conditions met?
- Will compensatory mitigation be needed to reduce impacts?

OR

- Are Regional General Permit (GP/RP) criteria and conditions met?

No Permit Required –
Life goes on …



Application must be evaluated
as a Standard (Individual) Permit
(*see next page*)

No

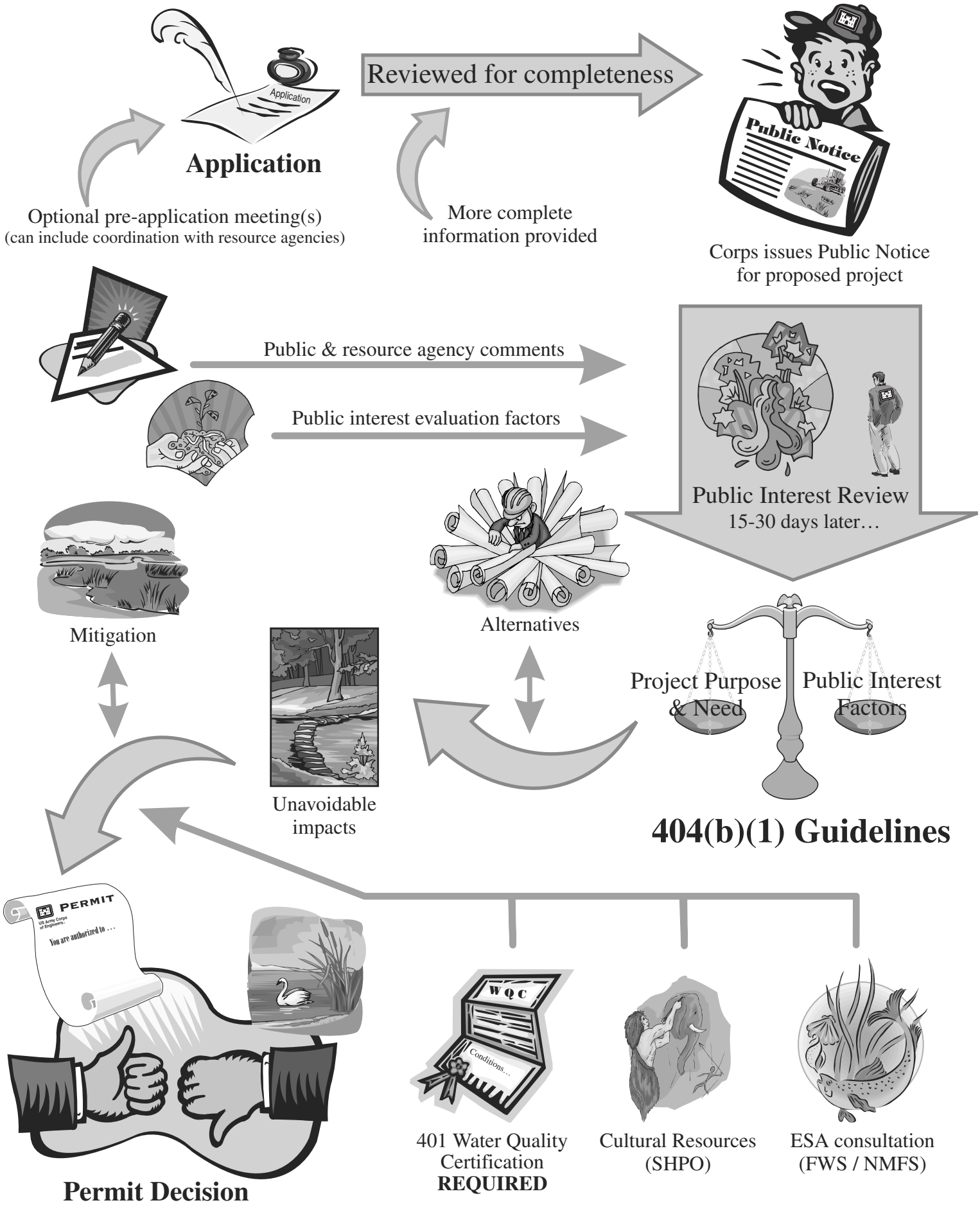
Yes

401 WQ Certification
SHPO concurrence
ESA consultation
Floodplain review
et. al.

Corps verifies
compliance with
NWP or RP

ragebhart

Individual Permit Review Process



ragebhart

Great Salt Lake Minerals Corporation
A Compass Minerals Company

Great Salt Lake Minerals Potassium Sulfate Expansion

Great Salt Lake Minerals Corporation (GSL) has been operating on the shores of the Great Salt Lake near Ogden, Utah since 1970. The company produces common salt, potassium sulfate (also known as sulfate of potash or SOP) and magnesium chloride, which is a natural deicing and de-dusting agent. GSL uses shallow solar ponds formed by low earthen dikes to extract these minerals from the Great Salt Lake through solar evaporation.

GSL is pursuing the expansion of its solar evaporation ponds in order to produce more potassium sulfate, a high-quality certified-organic fertilizer. The company is working closely with regulatory agencies to evaluate and responsibly implement its planned expansion with attention to the public's interests as well as its own.

Potassium Sulfate Production

All food crops require potassium, nitrogen and phosphorous. Potassium sulfate is a specialty potassium fertilizer that also contains beneficial sulfur. Unlike the most-common potassium fertilizer, muriate of potash, potassium sulfate does not contain chlorides which can be detrimental to the root systems of many food crops.

To produce potassium sulfate, water from the north arm of the Great Salt Lake is pumped to 23,000 acres of solar evaporation ponds on the west side of the lake. As water gradually evaporates from the brine, the potassium concentration is increased. This pre-concentrated brine is transferred to 22,000 acres of solar ponds on the east side of the lake through the Behrens Trench, a canal that runs 21 miles along the bottom of the lake. On the east side of the lake, the brine flows through another series of ponds where it further concentrates through solar evaporation from May through September.

Over the course of the three-year solar evaporation process, minerals naturally precipitate out of the brine in a predictable sequence. The first product to precipitate is sodium chloride crystals, or common salt. Continued evaporation in the subsequent series of ponds produces a mix of potassium salts comprised of potassium, magnesium, sodium, chloride and sulfate. Magnesium chloride brine is the final product of this process.

The potassium minerals are harvested from the ponds from September through May and transported by truck to the plant for purification and conversion to potassium sulfate. The potassium sulfate plant does not consume or produce any hazardous chemicals or generate hazardous waste byproducts.

Pond Expansion Project Description

To expand potassium sulfate production from the Great Salt Lake, GSL proposes to add solar evaporation ponds adjacent to its existing ponds on the east and west sides of the Great Salt Lake.

Clyman Bay (West Ponds) Expansion

GSL operates 23,000 acres of solar evaporation ponds at Clyman Bay and seeks to construct a new 18,000-acre solar pond in the Great Salt Lake between the existing ponds and Dolphin Island to the north. A new feed canal into the lake and a new pump station would be constructed on the north end of

this new pond. Diesel-driven pumps, similar to those currently in use, will pump brine from the new feed canal to the new pond. Existing pumps will be used to flow brine from the new pond to an existing pond.

GSL also seeks to construct a new 7,000-acre solar evaporation pond between the existing ponds and the railroad to the south. GSL has existing leases from the State of Utah for all but 2,500 acres of this area. The remaining area is State School Trust Land under lease to a third party. Brine will flow by gravity from an existing pond to this new pond. A new pump station will pump brine from this new pond back to an existing pond.

This combined 25,000-acre expansion will increase the concentration of brine transported through the Behrens Trench to the Bear River Bay ponds.

Bear River Bay (East Ponds) Expansion

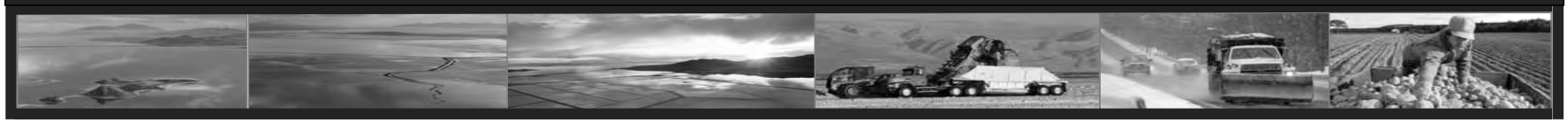
In addition, GSL seeks to construct an 8,000-acre solar pond on existing State Sovereign Lands leases in the Bear River Bay. This new pond area is classified in Utah's March 1, 2000 Great Salt Lake Comprehensive Management Plan and Decision Document as Class 1 - Protect existing resource development uses.

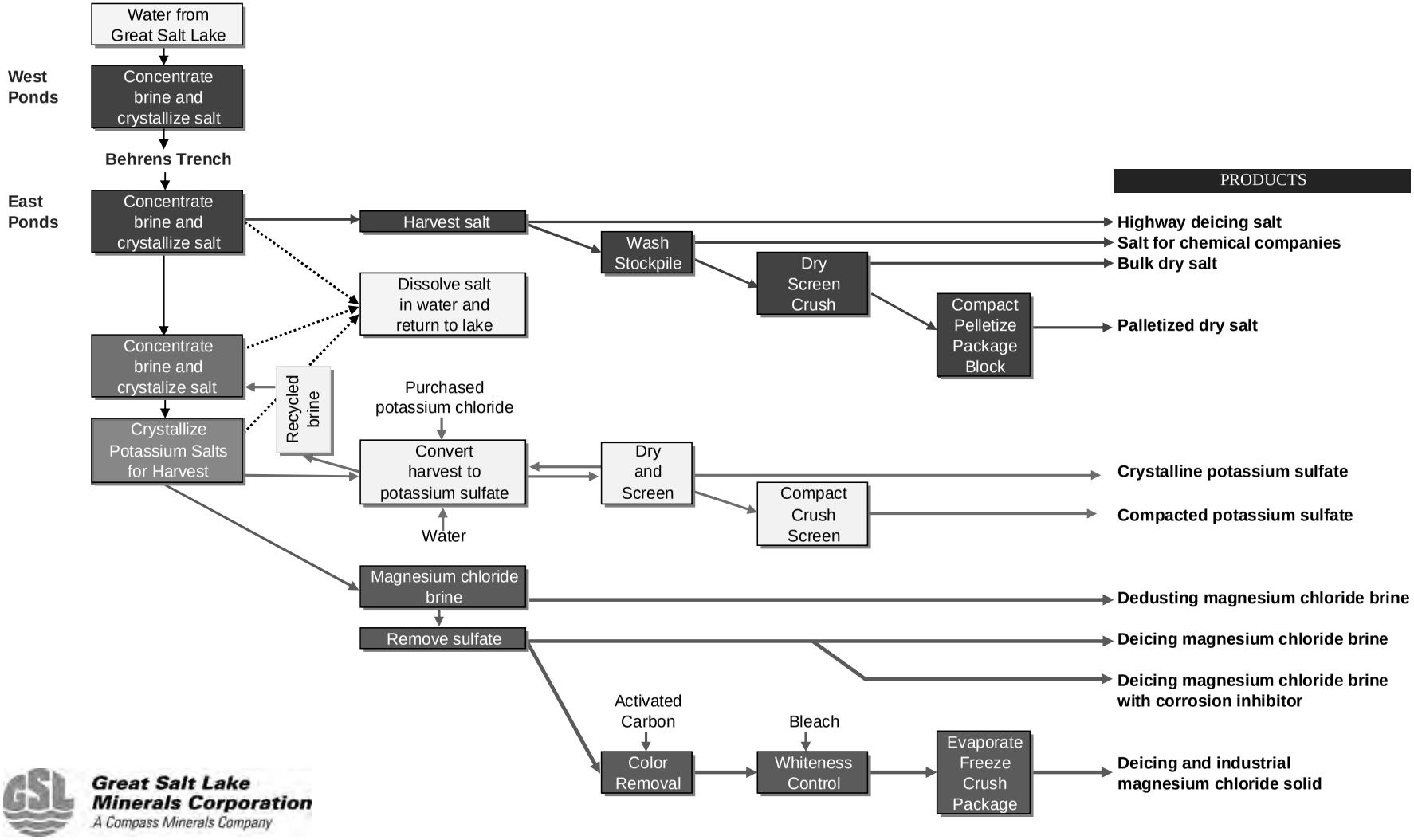
Additional potassium minerals produced from these pond expansions will be harvested from the existing east ponds by reconfiguring the existing pond area for more potassium mineral deposition and harvesting.

Summary

- Great Salt Lake Minerals has used solar evaporation to extract naturally occurring minerals from the Great Salt Lake since 1970.
- During the solar evaporation process, increasingly concentrated lake water progresses through shallow ponds formed by low earthen dikes.
- Lake water must be allowed to evaporate for at least three years to yield organic sulfate of potash fertilizer.
- Great Salt Lake Minerals currently maintains 23,000 acres of solar evaporation ponds at Clyman Bay and 22,000 acres of solar ponds at Bear River Bay.
- The company proposes to add 25,000 acres of ponds to its operations in Clyman Bay and to add 8,000 acres of ponds in Bear River Bay.
- Additional ponds will produce more organic sulfate of potash fertilizer, which is used to produce vegetables, fruits and tree nuts.
- There is currently a significant shortage of potash needed for food crops, including organic potash.
- Great Salt Lake Minerals' production processes do not consume or produce hazardous chemicals or generate hazardous waste byproducts.
- Working closely with regulatory agencies and soliciting public input to determine possible impacts to the natural environment.

Great Salt Lake Minerals Corporation Process Flow





Great Salt Lake Minerals Corporation
A Compass Minerals Company

PRELIMINARY ISSUES TO BE ADDRESSED IN THE ENVIRONMENTAL IMPACT STATEMENT (EIS)

From January through April 2007, the U.S. Corps of Engineers and the Great Salt Lake Minerals Corporation sponsored a series of pre-scoping meetings. Inter-agency meetings included the U.S. Fish and Wildlife Service; Environmental Protection Agency; Utah Division of Wildlife Resources; U.S. Geological Survey; Utah Geological Survey; and Utah Division of Forestry, Fire and State Lands. A non-governmental meeting was held with representatives of the National Audubon Society, Friends of the Great Salt Lake, Great Salt Lake Alliance, and Intermountain West Joint Venture.

The meetings resulted in the formulation of a series of questions or concerns that will be addressed through the Environmental Impact Statement (EIS) process. Continued scoping through agency and public participation in the process may generate additional questions or concerns that will also be addressed as relevant. The preliminary questions and concerns (i.e., issues) are presented on the following two pages.

It is important that the public and agencies make the effort to express their questions, concerns, and opinions to ensure that all relevant issues are identified and subsequently addressed in the EIS.

At the back of this informational packet is a written comment form. If you have additional comments or issues, please take the time to express them in writing. Written comments would be appreciated by December 17, 2007.

Clyman Bay

- **Change in Salinity Concentration of South Arm.** Would any change in saline density from pond expansion in North Arm affect flow into South Arm and affect salinity levels in South Arm?

- **Mobility and Uptake of Heavy Metals in South Arm**. If there is change in salinity, could selenium or mercury metals be freed and become contaminants within the productive South Arm food chain?

- **Waters of the United States**. Would Waters of the United States or special aquatic features be impacted by the proposed project?

- **White Pelican Disturbance at Gunnison Island**. Would pond expansion and associated dike construction impact the White Pelican nesting colony on Gunnison Island?

- **White Pelican Nest Predation at Gunnison Island**. Would new dikes act as predator conduits to the island?

- **Shorebird Nesting and Use, Particularly Snowy Plovers.** Does the shoreline provide habitat for shorebirds, especially to snowy plovers, which use mud flats and vegetated mud flats for nesting?

- **Avian Use, Including Raptor Nesting, of Shoreline to the North, Including Dolphin Bay**. Would construction of the proposed expansion pond affect wildlife use?

- **Cultural Resources.** Would the proposed project adversely affect any Cultural Resource (i.e., historic, archaeological, or Native American)?

- **Change in Shrimp Production or Availability**. Would changes in water quality or circulation affect brine shrimp production? Would any changes affect the shrimp harvesters?

- **Recreation**. Would the solitude of the area be affected and, if so, would this affect recreational opportunities?

Bear River Bay

- **Heavy Metal Contamination of Bear River Bay.** Would maintenance flushing of the new pond at Bear River Bay affect existing water quality? Would flushing mobilize heavy metals or other contaminants?

- **Potential Nutrient Loading at Bear River Bay.** Would maintenance flushing of the new pond increase nutrient loading of Bear River and subsequently affect the lake ecosystem?

- **Waters of the United States**. Would Waters of the United States or special aquatic features be impacted by the proposed project?

- E**ffect on Large Population of Canada Geese During Molting**. It appears this area is habitually used by up to 10,000 non-breeding geese for molting purposes. Would a new evaporation pond affect this use?

- **Effect on Water Bird Use of Open Water.** Bear River Bay is considered a very important area of open water for birds. Would the water bird use be affected by the impoundment? Fresh water exchange between Willard Spur and Bear River Bay is important to maintain ecological conditions. Would s large new pond affect water flow between the two areas?

- **Change in Shrimp Production or Availability**. Would changes in water quality or circulation affect brine shrimp production? Would any changes affect the shrimp harvesters?

- **Recreation.** Would waterfowl hunters have concerns regarding access and affect on waterfowl?

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

If you have additional comments or issues, please take the time to express them in writing. Please submit your written comments by December 17, 2007.

Comment Form

Name: _____ **Address:** _____

_____

_____

Representing (optional): _____ **Self** _____ **Other** (please specify) _____

Comments or Concerns:

_____

_____

_____

_____

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fold over

BIO-WEST, Inc.
1063 West 1400 North
Logan, UT 84321

place postage here

Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

fold over

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

November 7, 2007
5pm - 9pm

Public Meeting: *South Davis Junior High School*
298 W. 2600 South
Bountiful, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Rob Baskin	USGS 2329 W. Orton, WVC, UT 84119	USGS
MATTHEW SMITH	3868 WESTWOOD DR. OGDEN UT 84414	THE PINTAIL DUCK CLUB
Dick Clark.	1595 Wynkoop st Denver 80202	USEPA
Kathleen Anderson	713 Woodland Hills Bountiful UT 84010	USACE
SCOTT STODDARD	3326 S. 400 E BOUNTIFUL, UT 84010	USACE
Jack Greene	500 Summit Creek Dr Smithfield, 84335	Audubon
Bryan Dixon	10 Heritage Cove Logan, UT 84321	Bridgeland Audubon
Sam Kramer	~~5505~~ 515E 5300 S. Ogden 84405	UDWR
John Luft	P.O. Box 165006 SLC 84116	UDWR
Jerald Olsen	2664 W 3900 S Roy, UT	Ducks Unlimited
Charles Fisher	552 No Main Farmington Ut	

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

November 7, 2007
5pm - 9pm

Public Meeting: South Davis Junior High School
298 W. 2600 South
Bountiful, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
R Jefin Hicks	6680 So 475 E So Weber UT 84405	Utah Airboat Assoc
Steve Smith	1639 E. Lakeview Dr Bntfl UT 84010	UT Waterfowl Assoc
Kirk Tolman	1021 Downington Ave SLC, UT	Western Wildlife Cons.
Jeff Pace	4853 Cherrywood Lane WVC Ut 84120	Utah airboats
Lynn Carroll	1563 Swan St Ogden 84401	Wasatch Audubon & self
LYNN PACE	4853 CHERRYWOOD LN W.V.C. 84120	U.A.B.
Mark Olsen	7415 So 700 E Midvale Ut. 84047	D.U.

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Ogden Nature Center*
966West 12th Street
Ogden, Utah

November 8, 2007

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Dave Meacham	2859N 850E, N. Ogden UT	—
Annie Smith	2805 Fillmore Ave. Ogden Ut.	
Jack Rinaldi	1225 32ND St. Ogden Utt. 84403	Self.
Mary McKinley	1487 Beverly Drive, Ogden, UT 84403	Ogden Nature Center
[illegible]	443 N. 2550 W. Ogden, ut. 84404	SELF
Bob VanDyke	2457E 5950 So. Og. UT 84403	Pintail Duck Club
BRANDY CANNON	PO BOX 188 HOOPER, UT 84315	—
Paul Shields	5813 Village Way, So. Ogden UT	Canada Goose/Ducks Unl
MATTHEW SMITH	3868 N WESTWOOD DR. OGDEN UT 84414	PINTAIL CLUB
William Thomas	1213 Hudson Ogden ut	
Buddy Elliott	5010 S. 2125 W. Roy, UT	

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Ogden Nature Center*
966West 12th Street
Ogden, Utah

November 8, 2007

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Cheryl Smith	2865 N 150 W N Ogden 84414	Self
Steve Hicks	408 E 850 N Brigham City	MK
Sherry Tolman	475 E 485 N Ogden UT 84404	GSL
Jack Tolman	" " " " "	Self
LARRY Schutte	8114 West 138th ST D OVERLAND PARK KS	Self
John Obrik	537 W. 2200. S.	Self
B Jeffre Hicks	6680 So 475 E So. Weber UT 84405	Utah Airboat Assoc
Richard Noble	638 W. 2525 S. Syracuse UT. 84075	" " "
Tim Robb	3703 N. 2000 W. Farr West, UT. 84404	Self
[illegible]	5477 S 200 E Ogden UT 84405	SELF

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Ogden Nature Center*
966West 12th Street
Ogden, Utah

November 8, 2007

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Gary Slat	771 Chamber St	Bear River Club
Jim Hill	858 N 4100 W West Point UT 84015	
Ronald Smith	2865 N. 150 W.	
Jeff Farr	56 S. Meadow Rd Mantua UT 84324	UTAH Airboat Assn.
Pete Hansen	5714 S 5500W Hooper UT 84315	UTAH AIRBOAT ASSN
Mark Bar	2604 E Cole Rd 84403	UTAH
Lex Shaw	2895 N 750 E UT 84414	UTAH ~~Airboat~~
Marilyn O'Dell	1120 Canyon Rd. #26 84404	UTAH SELF
Al Trout	2670 N. 750 E. 84411	UT SELF
Tom Walker	631 NO. 600E BRIGHAM CITY, 84203	UT ~~BEWF~~
Ron Costel	1551 mth Rd Logan UT 84321	UT Self

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Ogden Nature Center*
966West 12th Street
Ogden, Utah

November 8, 2007

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
TRoy THompson	2803 S. 2675 W. SyRACuse UT. 84075	DELTA WATERFOWL
DAVE CASPERSON	4163 W 4000 No. PLAIN CITY, UT 84404	UTAH AIRBOAT ASSCO.
Eric Casperson	2206 N 4500 W Plain City, UT 84404	UAB
Chris Cakines	4950 Hollow Road Nibley, UT 84321	Bridgerland Audubon

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

November 14, 2007
5pm - 9pm

Public Meeting: Airport Inn Conference Room
2333 W. North Temple
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Jim VanLeeuwen	450 Havasu St Tooele Ut	Private
Jaimi Butler	1530 S. 700 E. Salt Lake City UT	private
Jason Curry	1594 w. North Temple	UT FFSL
David Gomerson	1596 W. No Temple	UT FFSL
Bruce Fowler	6130 Winnetka Ave, Woodland Hills, CA	Private
Susan White	DOGM 1594 W North Temple SLC 84115	DOGM
Don S. Paul	5928 River View Cir. MT. Green UT 84050	
Kathleen Anderson	533 W 2600 South, #150 Bountiful UT 84010	USACE
LYNN PACE	4853 CHERRYWOOD LN W.V.C. UTAH 84128	Dickson Mint
Sarah Miley	58 N. Main St. Tooele, Ut 84074	Tooele transcript bulletin
Wayne Martinson	549 Cortez St	National Audubon

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

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Public Meeting: Airport Inn Conference Room
2333 W. North Temple
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
NANCY KEATE	UDWR 1594 W. No. Temple #2110	Wildlife Resources
JORO WALKER	425 east 100 s, SLC, UT 84102	Western Resource Adv.
Nathan Darnell		US Fish + Wildlife
Greg Hansen	1858 E 1300 S SLC, UT 84108	
John Neill	1052 Roosevelt Ave SLC, UT 84105	
Katie Pearce	572 7th Ave 84103	Friends of Great Salt Lake
Jennifer Wigland	1594 W. North Temple Ste SLC UT 84108	FFSL
Kimbo Birkinshaw	1194 DEL RIO Holladay UT 84117	Utah Air Boat Inc.
John Ruple	—	State of Utah
[illegible]	[illegible] SLC	Self
Ed Jeutas	1112 E. 600 S. SLC. 84102	Friends of Great Salt Lake

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

November 14, 2007
5pm - 9pm

Public Meeting: Airport Inn Conference Room
2333 W. North Temple
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Jeff Pace	4853 Cherrywood Lane WVC UT 84120	
Jeff Rice	18529 29th Ave NE Lake Forest Park, WA 98155	
David Butts	3949 W. Sienna Dune Dr. So. Jord. Ut. 84095	
Patty Butts	" " " " " Jordan " "	
Jacob Bryner	1323 30th St. Ogden, 84403	
Tim Brown	573 7th Ave, SLC, UT 84103	
Linda Bonar	1820 E 3990 So SLC UT 84124	
John Straton	" " "	
Juan C. Arce-Larreta	677 E. 50 N. NSL UT 84054	
Marc Heilesen	2159 S 700 E SLC, UT 84106	Sierra Club
PETE KUENNEMANN	1024 1ST AVE, SLC, UT, 84103	" "

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

November 14, 2007
5pm - 9pm

Public Meeting: Airport Inn Conference Room
2333 W. North Temple
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Charles Geibel	1266 E 500 S SLC, Ut. 84101	Great SALT LAKE photos LLC

US Army Corps of Engineers®

The U.S. Army Corps of Engineers

Invites You to Attend
Public Information Meetings
on the

US Army Corps of Engineers®

Proposed 91,000 Acres Expansion of Solar Evaporation Ponds on the Great Salt Lake

Why: The Corps is conducting public scoping meetings in preparation of their environmental document. This is an opportunity to view displays, meet project representatives, ask questions, and learn about the project. A first round of public scoping meetings took place in November of 2007 for a proposed 33,000 acres expansion of evaporation ponds. The current public scoping meetings will be an opportunity to review and comment on the proposed expansion of the project to include an additional 42,000 acres of evaporation ponds, for a total of 75,000 acres.

When and Where:

Thursday June 4, 2009 **Anytime between 5:00pm – 8:00 pm**
Bountiful City – Davis County Library South Branch, 725 South Main Street, Bountiful, Utah

Tuesday June 9, 2009 **Anytime between 5:00pm – 8:00 pm**
Ogden City – Comfort Suites Hotel, 2250 South 1200 West, Ogden, Utah

Thursday June 11, 2009 **Anytime between 5:00pm – 8:00 pm**
Salt Lake City – West High School, 241 North 300 West, Salt Lake City, Utah

Format: Open house; No formal presentations – come anytime between 5:00 p.m. and 8:00 p.m. on the appointed days.

U.S. Army Corps of Engineers

Public Information Meeting

on the

Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Information Packet

June 2009

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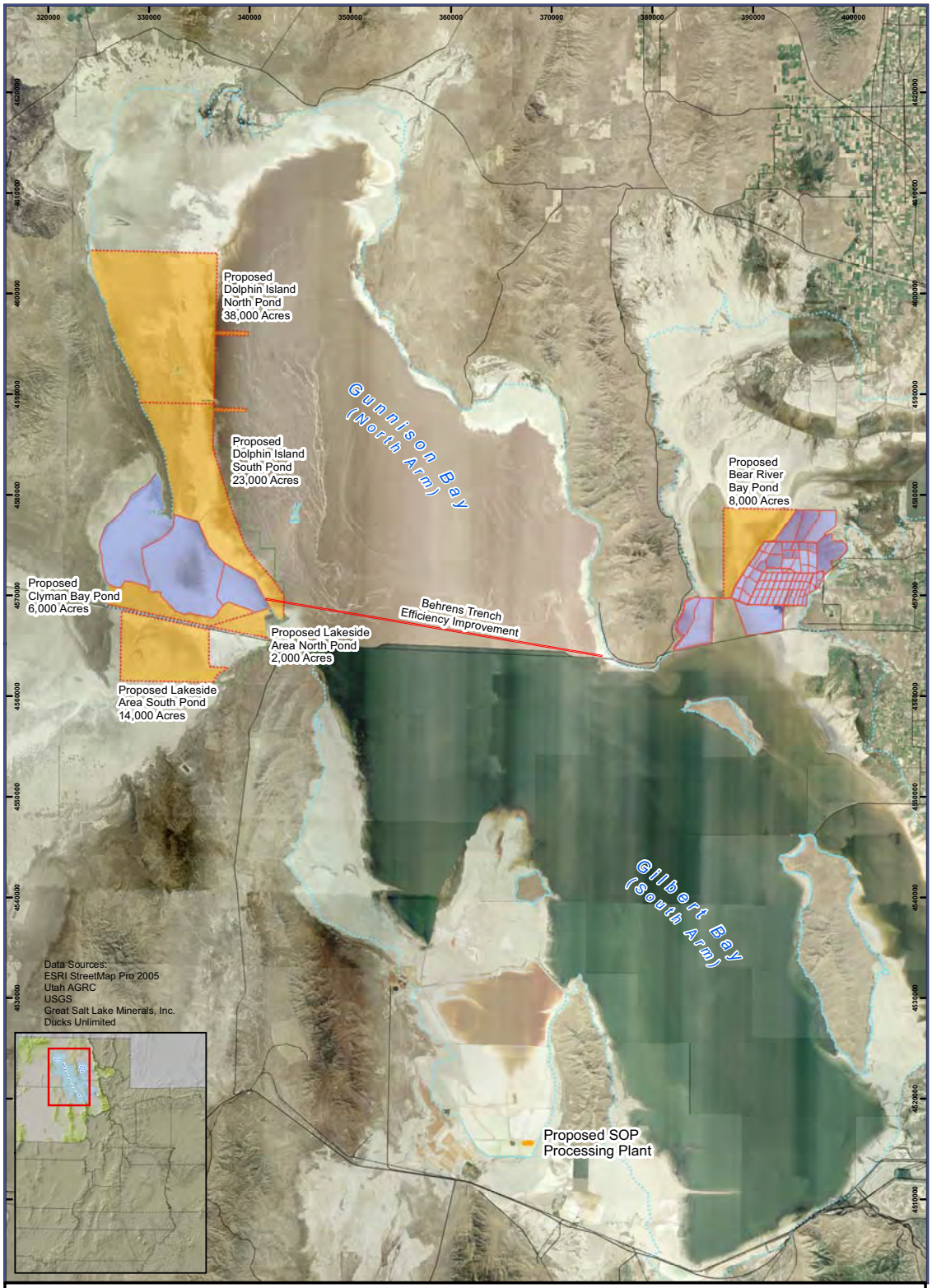


Imagery from NAIP 2006
Aug. 9 - Sept. 12
Lake Elevation on Median Date (8/26/06)
Noth Arm - 4196.1
South Arm - 4197.07
1:400,000
Projection: Transverse Mercator
Datum: North American 1983
Zone: 12 North

N

0 2 4 8 Miles

GSLM, Inc. Dikes and Ponds

Dikes
- Existing
- Trench
- Proposed
- Lease Boundary
- GSL Meander Line

Ponds
- Existing
- Currently Proposed Expansion

Other
- Major Roads
- Railroads

GREAT SALT LAKE MINERALS
Production Expansion Project

Proposed Action Overview

Map Dated May 15, 2009
Q:\projects\GSLM_1067\Maps\Expansion_Overview_TL.mxd

Public Notice

US Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Public Notice Number: SPK-2007-00121
Date: May 26, 2009
Comments Due: July 9, 2009
In reply, please refer to the Public Notice Number

SUBJECT: The U.S. Army Corps of Engineers-Sacramento District (Corps) is evaluating an amended permit application to construct the Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion Project, which has expanded in scope from 33,000 acres to a proposed 80,000 acres of waters of the United States, including wetlands, in or adjacent to the Great Salt Lake. This notice is to inform interested parties of the proposed activity, to provide notice that the Corps is preparing a draft Environmental Impact Statement and will be conducting public scoping meetings, and to solicit comments. This notice may also be viewed at the Corps web site at http://www.spk.usace.army.mil/regulatory.html.

AUTHORITY: This application is being evaluated by the Corps under Section 404 of the Clean Water Act for the discharge of dredged or fill material in waters of the United States and by the State of Utah for Section 401 for water quality certification.

APPLICANT: Corey Milne
Great Salt Lake Minerals Corporation
765 North 10500 West
Ogden, Utah 84404

LOCATION: The project sites are located in and adjacent to the Great Salt Lake in:

Sections 15-22, 28-32, Township 7 North, Range 4 West;
Sections 5, 6 and 7, Township6 North, Range 4 West;
Sections 1-3, 10-12, Township 6 North, Range 11 West;
Sections 5-17, Township 6 North, Range 10 West;
Sections 7-8, Township 6 North, Range 9 West;
Sections 2-5, 8-16 and 22-24, Township 7 North, Range 10 West;
Sections 7-10, 15-22, 26-29 and 32-35, Township 8 North, Range 10 West;
Sections 12, Township 8 North, Range 11 West;
Sections 25-28, 33-36, Township 10 North, Range 11 West;
Sections 27-34, Township 10 North, Range 10 West;
Sections 1-4, 10-15, 22-26, 35-36, Township 9 North, Row 11 West;
Sections 3-10, 13-22, 27-34, Township 9 North, Range 10 West;
Sections 1 & 12, Township 8 North, Range 11 West;
Sections 3-10, Township 8 North, Range 10 West;
Sections 3, 4, 5, 10, 11, 12, Township 6 North, Range 9 West;
Sections 8, 7, 9, 10, 14, 13, 15, Township 6 North, Range 8 West;
Sections 16, 17, 18, 20, 21, 22, 23, 24, Township 6 North, Range 7 West;
Sections 19, 26, 27, 28, 29, 30, Township 6 North, Range 6 West;
Sections 6 and 7, Township 6 North, Range 3 West;
Section 31, Township 1 North, Range 6 West; and
Sections 33 – 36, Township 1 North, Range 7 West;

This area can be seen on the Hogup Ridge North, Dolphin Island West, Crocodile Mountain SE and Willard Spur USGS Topographic Quadrangles.

PROJECT DESCRIPTION: In accordance with the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers-Sacramento District (Corps) will prepare an Environmental Impact Statement (EIS) for Corps authorization actions for the proposed Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion project. The basic project purpose is potassium sulfate extraction/mining. The overall project purpose is to increase production/output of organically certified potassium sulfate to help meet the increasing demand for this type of fertilize. The applicant believes there is a need to increase production of potassium sulfate in order to maintain its market share over the next 50 years.

The proposed expansion would add approximately 91,000 acres of solar evaporative ponds, impacting approximately 80,000 acres of waters of the United States, including wetlands, and reduce the need to import raw potassium from other sources. The EIS will address impacts such as wildlife habitat, water quality, Great Salt Lake water elevations, wetlands, hydrology, cultural resources, transportation, endangered species and industry. The projected date for public release of the Draft EIS is October 30, 2009.

PUBLIC SCOPING MEETINGS. Three public scoping meetings will be held. The first scoping meeting will be held on **June 4, 2009 from 5-8 pm at the Davis County Library, 725 South Main Street, Bountiful, Utah**. The second public meeting will be on **June 9, 2009 from 5-8 pm at the Comfort Suites Hotel, 2250 South 1200 West, Ogden, Utah**. The third meeting will be held on **June 11, 2009, from 5-8 pm at West High School, 241 North 300 West, Salt Lake City, Utah**. Public comments will be accepted at the scoping meetings or may be mailed to Mr. Jason Gipson, Nevada-Utah Regulatory Branch, 533 West 2600 South, Suite 150, Bountiful, Utah 84010, or emailed to: jason.a.gipson@usace.army.mil. All comments must be received on or before **July 9, 2009**.

SUPPLEMENTAL INFORMATION: Great Salt Lake Minerals Corporation (GSL Minerals) currently operates approximately 47,000 acres of evaporative ponds located on the east and west shores of the Great Salt Lake. A 25,000-acre evaporation facility is located on the west shore of the North Arm of the Great Salt Lake and a 22,000-acre evaporation facility is located on the east shore of the Bear River Bay. The existing solar evaporation pond facilities are located within the Great Salt Lake, i.e., the ponds are located below 4205 feet mean sea level, which is below the high water mark of the Great Salt Lake. The company draws naturally occurring brine from the lake into shallow ponds and allows solar evaporation to produce sulfate of potash, as well as salt and magnesium chloride minerals. Sulfate of potash is a specialty fertilizer that improves the yield and quality of high-value crops such as fruits, vegetables, tea, tree nuts and turf grasses. The GSL Minerals facility has operated on the lake for 40 years.

The applicant originally proposed in late 2007 to construct three additional solar evaporation ponds totaling approximately 33,000 acres. The 2007 proposed project included adding two new solar ponds to the existing west side complex, an 18,000-acre Dolphin Island expansion pond and a 7,000-acre pond at the southern end of Clyman Bay between the Union Pacific Railway and several existing ponds. A new feed canal into the lake and a new pump station would be constructed on the north end of the proposed Dolphin Island pond. Diesel driven pumps, similar to those currently in use, would pump brine from the new feed canal to the new pond. Existing pumps would be used to pump brine from the new pond to an existing pond. The total 25,000-acre pond expansion on the west side would increase the concentration of brine transferred to an existing gravity-flow trench for transport to the east ponds in the Bear River Bay. Additionally under the 2007 proposal, an 8,000-acre pond would be constructed on the east side of the Great Salt Lake in the Bear River Bay. Brine would be pumped to and from the new pond with existing pump stations; however, the capacity of these pump stations would be increased proportional to the new pond acreage. Additional feed brine for this new pond would come from the North Arm of the Great Salt

Lake (Gunnison Bay), flowing through existing east side ponds.

Under the 2007 proposal, dikes would be built to accommodate the pond expansion and impound the waters of the respective areas. On the east side of the lake, approximately 540,000 cubic yards of fill would be discharged into Bear River Bay to create the dikes. On the west side, approximately 900,000 cubic yards of fill would be discharged into open water in the vicinity of Clyman Bay to create dikes.

The 2009 revised project proposes to: 1) retain the proposed construction of an 8,000-acre pond in Bear River Bay, 2) decrease the previously proposed 8,000 acre pond on the west shore of the lake along the north side of the railroad causeway to 6,000 acres, 3) increase the 18,000-acre pond to 23,000 acres, 4) add an additional 2,000-acre pond west of the above described 6,000-acre pond along the north side of the railroad causeway, 5) add a 14,000–acre pond on the south side of the railroad causeway, and 6) add an additional 38,000-acre pond in the Dolphin Island area of the lake (See attached figures). On the east side of the lake, approximately 540,000 cubic yards of fill would be discharged into Bear River Bay to create the dikes. On the west side, approximately 4.7 million cubic yards of fill would be discharged into open water in the vicinity of Clyman Bay to create dikes.

The total 83,000-acre West Pond Expansion (including Lakeside Lease areas) would increase the concentration of brine transferred to an existing gravity-flow trench (Behrens Trench) for transport to the GSL Minerals east solar evaporation ponds in the Bear River Bay (Figures 1, 2 and 3). Ultimately as part of the proposed project the efficiency of the Behrens Trench would be improved to reduce mixing of concentrated brine with lake water surrounding the trench by either by improving the existing the open Behrens Trench by excavating the trench wider and deeper or by laying pipes in the existing trench (Figures 2 and 3).

In addition the project includes the purchasing and transporting SOP from the U.S. Magnesium ponds located along the southwestern margin of the lake to the existing processing facility. GSL Minerals will also increase SOP production by constructing an SOP processing plant within the U.S. Magnesium pond area (Figure 4).

The proposed project habitat areas include saline open water, sporadically inundated playa lakebed, seasonally flooded playa, saline wetlands, potential freshwater springs, rip-rapped dikes and sandy upland habitats. These areas are located adjacent and to the north of the existing evaporation pond facilities. The Corps verified a jurisdictional wetland delineation for the 2007 proposed project on October 10, 2007, which identified approximately 34,180.08 acres of waters of the U.S, including 21.4 acres of saline wet meadow wetlands, 1,102.94 acres of seasonally inundated playa above the high water mark of the western side of the Great Salt Lake and 33,055.74 acres of seasonally or sporadically inundated playa lake bed below the high water mark of the Lake. A delineation of waters of the U.S. has not been completed or verified for the additional areas proposed under the 2009 revised application. However, it is estimated the additional 50,000 acres are all located within the ordinary high water mark of the Great Salt Lake, resulting in the same acreage of additional impacts to waters of the U.S. The proposed project would result in approximately 80,000 acres of permanent adverse impacts to waters.

Alternatives. The applicant has not provided information concerning project alternatives. Other alternatives may develop during the review process for this permit application. All reasonable project alternatives, in particular those which may be less damaging to the aquatic environment, will be developed and analyzed during the preparation of the Draft EIS.

Mitigation. The Corps requires that applicants consider and use all reasonable and practical measures to avoid and minimize impacts to aquatic resources. If the applicant is unable to avoid or minimize all impacts, the Corps may require compensatory mitigation. The applicant has not proposed a mitigation plan at this time. The determination of appropriate compensatory mitigation will be determined through public

scoping and impact analysis of the EIS process.

OTHER GOVERNMENTAL AUTHORIZATIONS: Under Section 401 of the Clean Water Act, water quality certification or a waiver is required from the State of Utah for this project. The Utah Division of Water Quality intends to issue certification, provided the proposed work will not violate applicable water quality standards. Projects are usually certified where the project may create diffuse sources (non-point sources) of wastes which will occur only during the actual construction activity and where best management practices would be employed to minimize pollution effects. Written comments on water quality certification should be submitted to Ms. Shelly Andrews, Utah Division of Water Quality, 288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870, or email shellyandrews@utah.gov on or before **July 9, 2009.**

HISTORIC PROPERTIES: Based on the available information, cultural resources may be located within the project's area of potential effect. The Corps has initiated coordination with the State Historic Preservation Office, local Tribes and other consulting parties with information regarding the existence and interest in Cultural and Historic Properties. If information regarding the impacts to Historic Properties is identified during the EIS process, the Corps will initiate formal consultation with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act.

ENDANGERED SPECIES: Based on available information the project will not affect any Federally-listed threatened or endangered species.

ESSENTIAL FISH HABITAT: The proposed project will not adversely affect Essential Fish Habitat (EFH) as defined in the Magnuson-Stevens Fishery Conservation and Management Act.

These determinations are based on information provided by the applicant and our preliminary review.

EVALUATION FACTORS: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the described activity, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the described activity will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people. The activity's impact on the public interest will include application of the Section 404(b)(1) guidelines promulgated by the Administrator, Environmental Protection Agency (40 CFR Part 230).

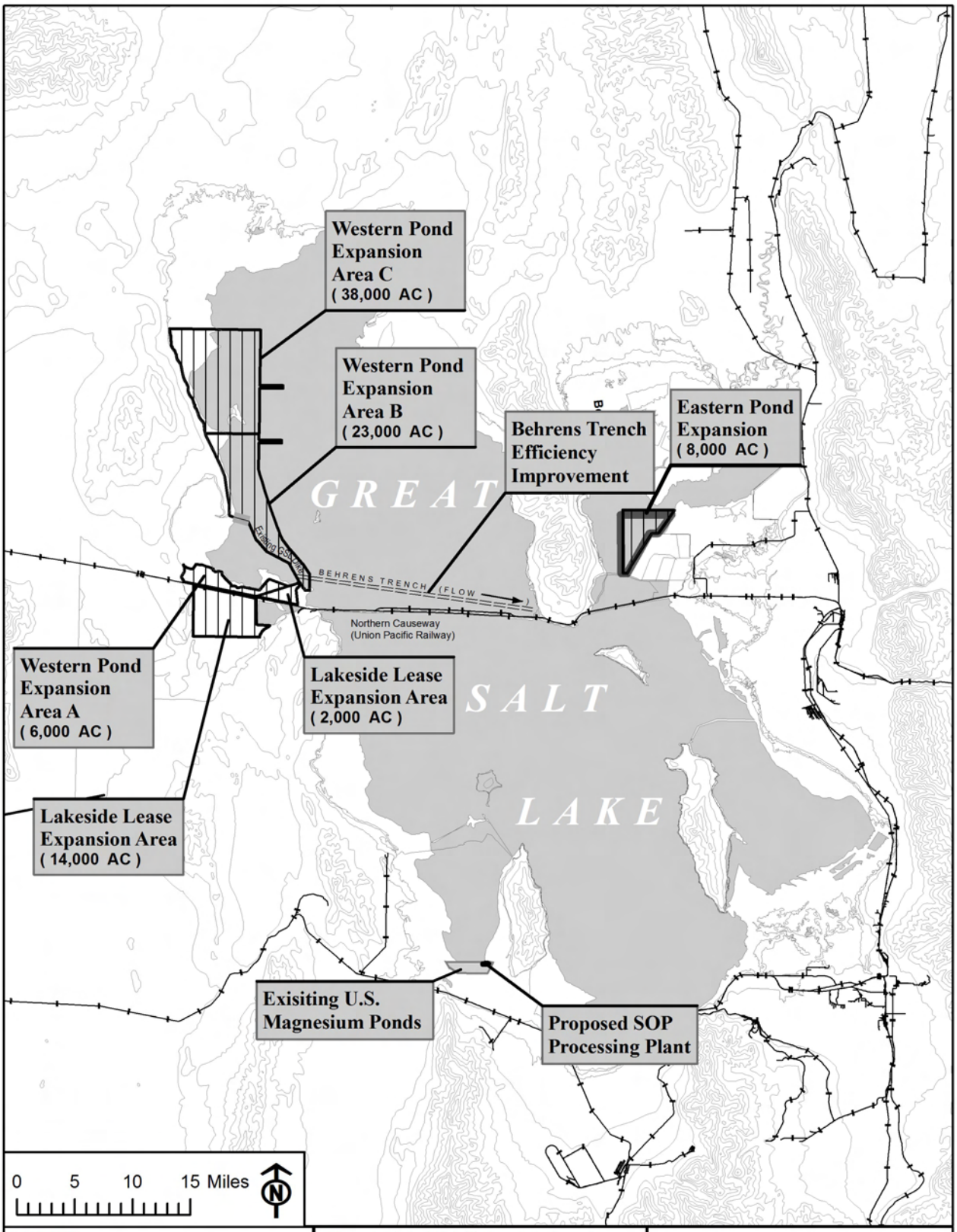
The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SUBMITTING COMMENTS: Written comments, referencing Public Notice SPK-2007-00121 must be submitted to the office listed below **on or before July 9, 2009.**

Jason Gipson, Project Manager, U.S. Army Corps of Engineers, 533 West 2600 South, Suite 150, Bountiful, Utah 84010, Email: jason.a.gipson@usace.army.mil

The Corps is particularly interested in receiving comments related to the proposal's probable impacts on the affected aquatic environment and the secondary and cumulative effects. Anyone may request, in writing, that a public hearing be held to consider this application. Requests shall specifically state, with particularity, the reason(s) for holding a public hearing. If the Corps determines that the information received in response to this notice is inadequate for thorough evaluation, a public hearing may be warranted. If a public hearing is warranted, interested parties will be notified of the time, date, and location. Please note that all comment letters received are subject to release to the public through the Freedom of Information Act. If you have questions or need additional information, please contact the applicant or Corps project manager Jason Gipson, 801-295-8380, x14, jason.a.gipson@usace.army.mil.

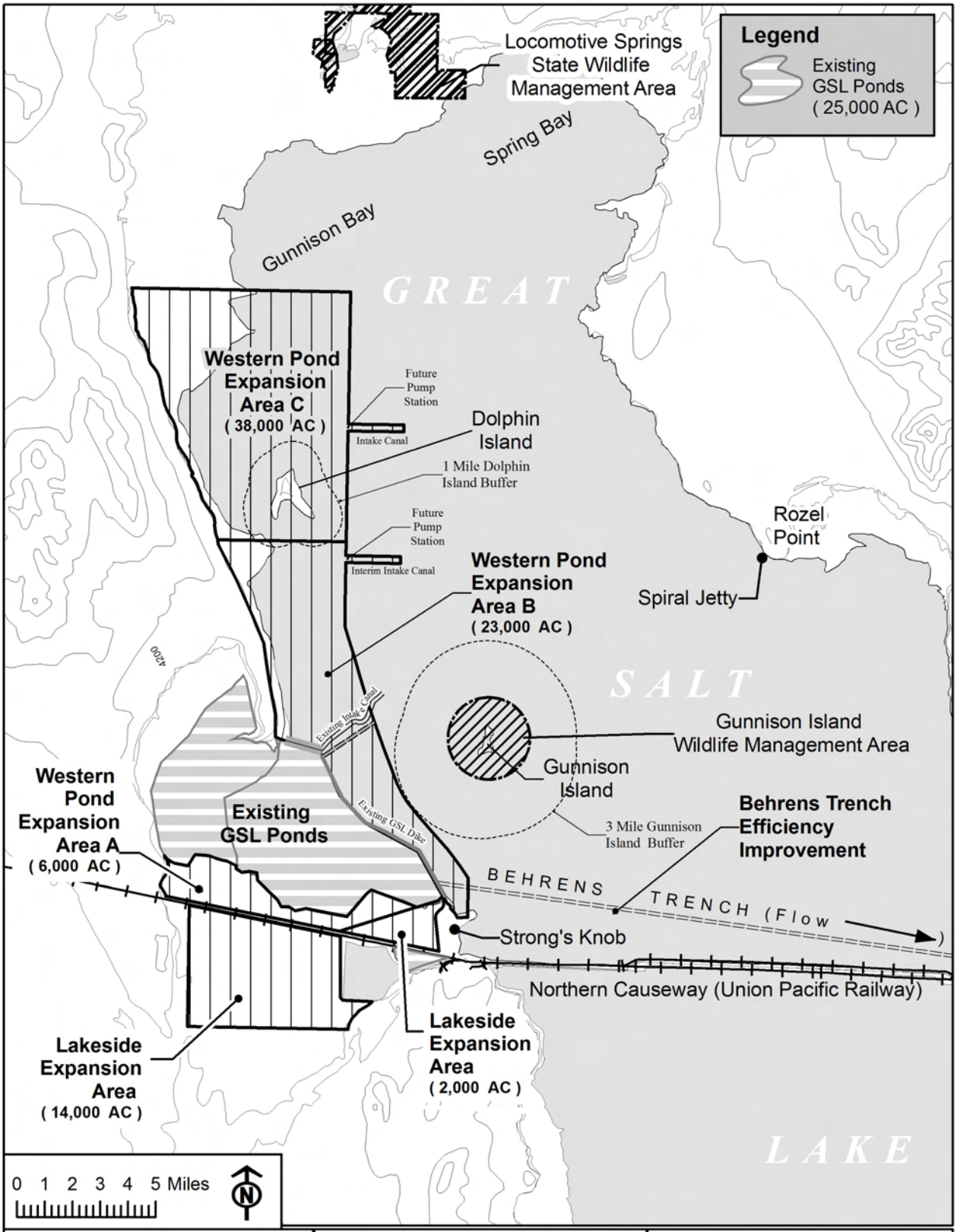
Attachments: 5 drawings



PURPOSE:
DATUM: MSL
ADJACENT PROPETY OWNERS:
1. BLM
2. Utah Division of Forestry, Fire and State Lands
3. Utah Trust Lands
4.

Figure 1. Project Vicinity Map, GSL Expansion Project
APPLICATION BY: Great Salt Lake Minerals Corp.
P.O. Box 1190
Ogden, UT 84402

Proposed fill
IN: waters of the United States
AT: Great Salt Lake
COUNTY OF: Box Elder **STATE:** Utah
Date: 3-20-09 r. 5-19-09

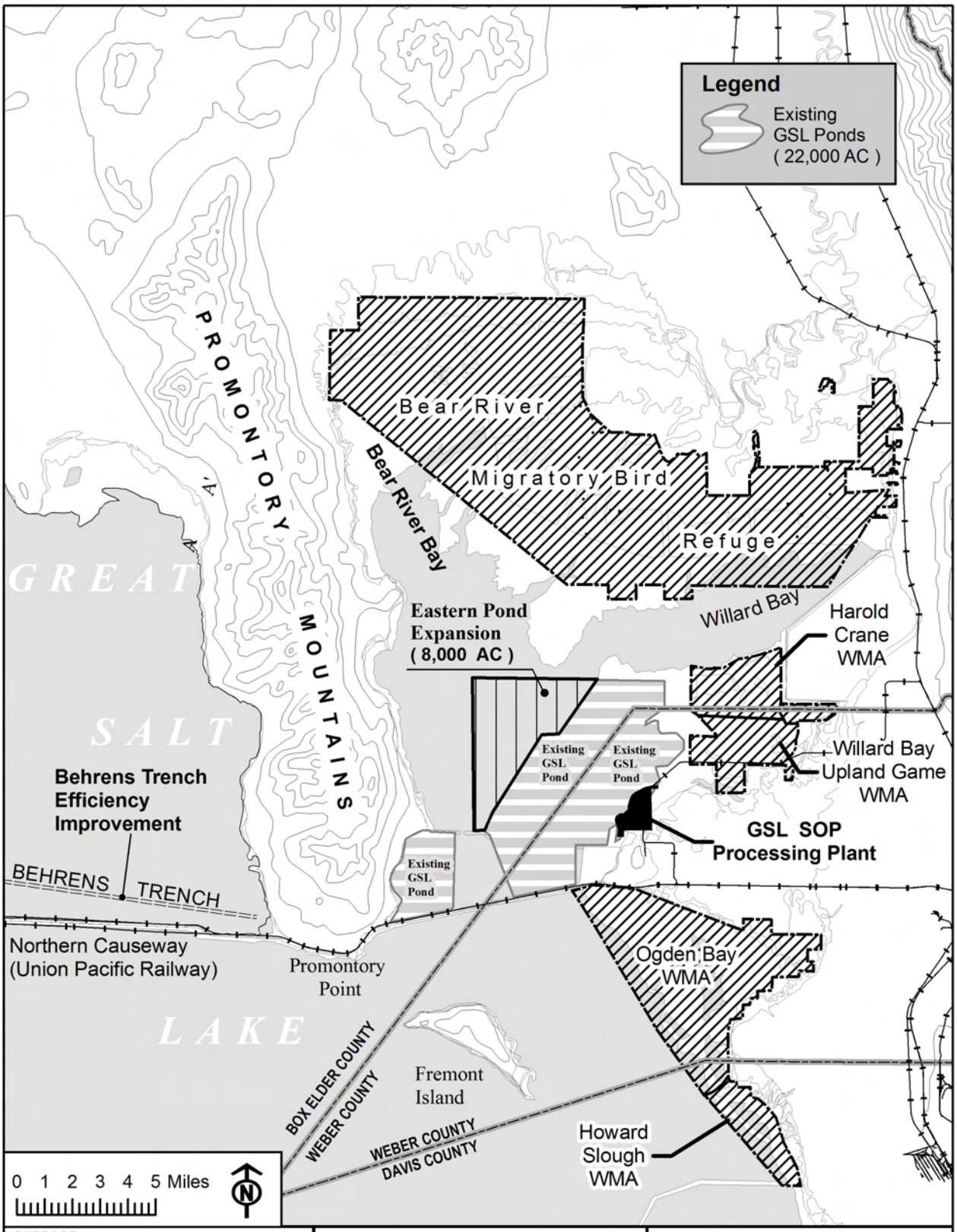


PURPOSE:
DATUM: MSL
ADJACENT PROPETY OWNERS:
1. BLM
2. Utah Division of Forestry, Fire and State Lands
3. Utah Trust Lands
4.

Figure 2. Project Location Map, West Pond Expansion, North Arm, Great Salt Lake

APPLICATION BY: Great Salt Lake Minerals Corp.
P.O. Box 1190
Ogden, UT 84402

Proposed fill
IN: waters of the United States
AT: Great Salt Lake
COUNTY OF: Box Elder **STATE:** Utah
Date: 3-20-09 r. 5-19-09

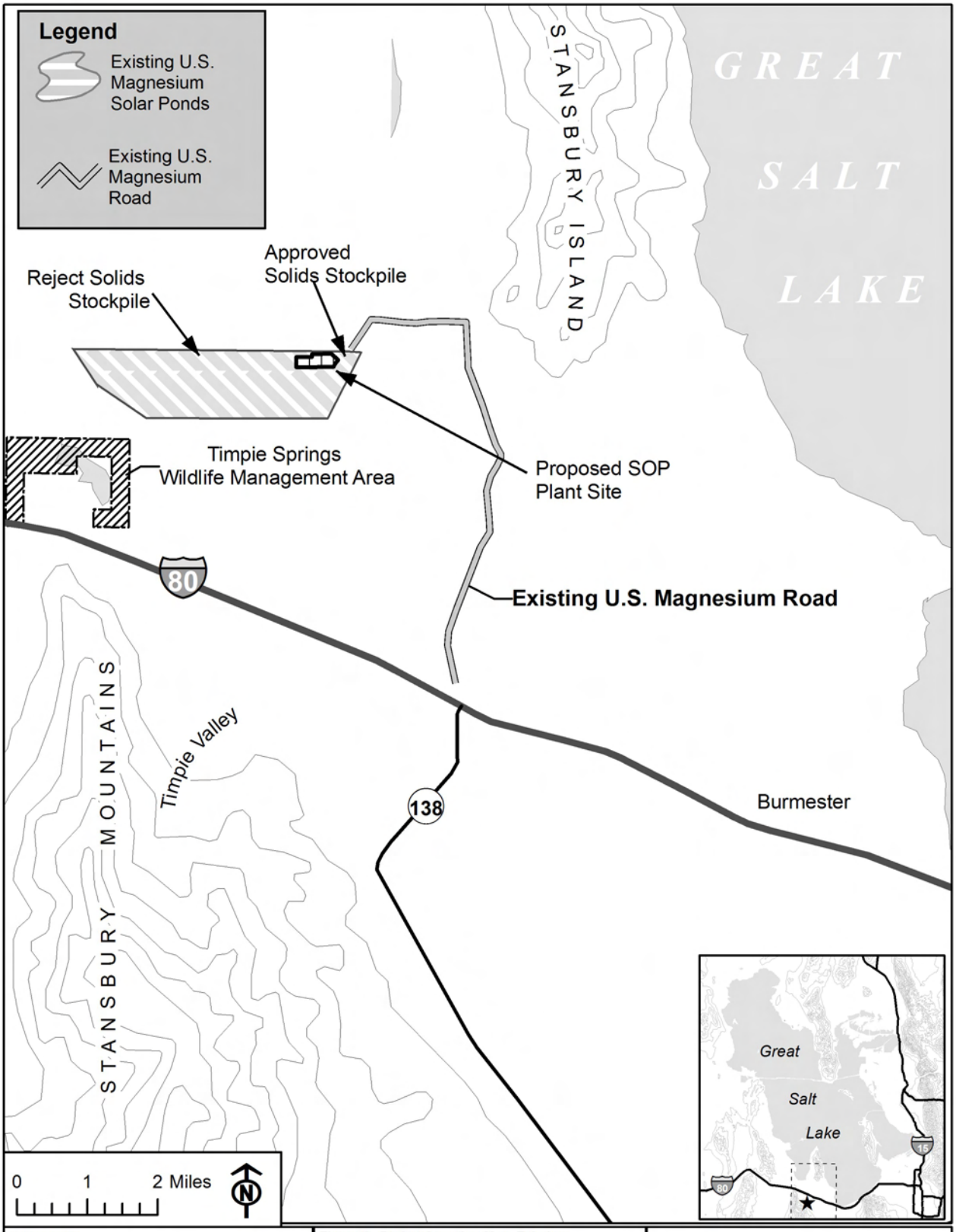


PURPOSE:
DATUM: MSL
ADJACENT PROPETY OWNERS:
1. BLM
2. Utah Division of Forestry, Fire and State Lands
3. Utah Trust Lands
4.

Figure 3. Project Location Map, East Pond Expansion, Bear River Bay, Great Salt Lake

APPLICATION BY: Great Salt Lake Minerals Corp.
P.O. Box 1190
Ogden, UT 84402

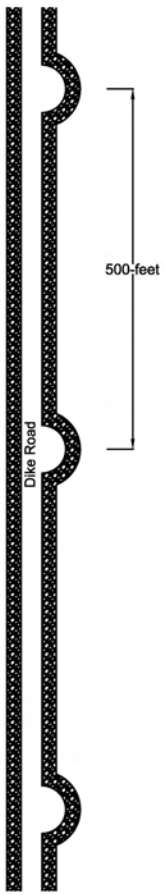
Proposed fill
IN: waters of the United States
AT: Great Salt Lake
COUNTY OF: Box Elder **STATE:** Utah
Date: 3-20-09 r. 5-19-09



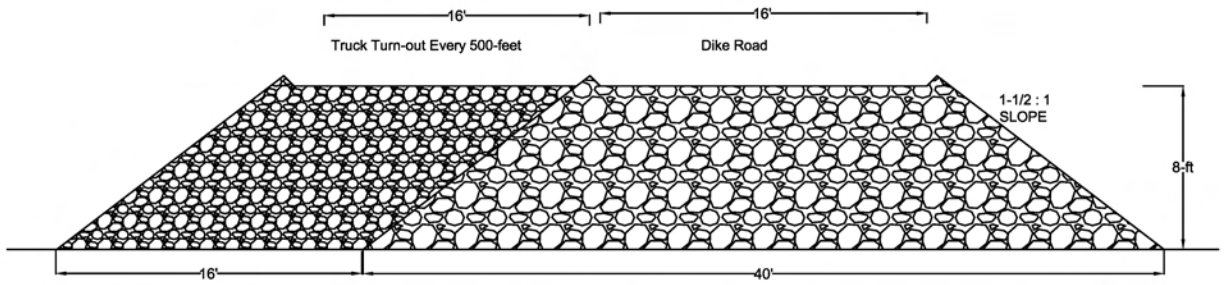
PURPOSE:
DATUM: MSL
ADJACENT PROPETY OWNERS:
1. BLM
2. Utah Division of Forestry, Fire and State Lands
3. Utah Trust Lands
4.

Figure 4. Project Location Map, Existing U.S. Magnesium Ponds and Proposed SOP Processing Plant, Great Salt Lake
APPLICATION BY: Great Salt Lake Minerals Corp.
P.O. Box 1190
Ogden, UT 84402

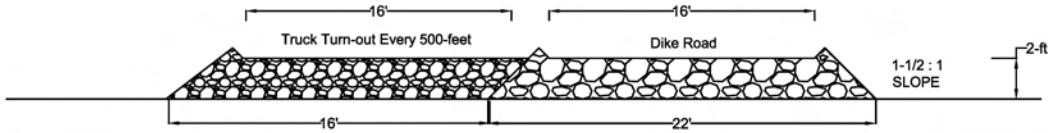
Proposed fill
IN: waters of the United States
AT: Great Salt Lake
COUNTY OF: Box Elder **STATE:** Utah
Date: 3-20-09 r. 5-19-09



Plan View



Elevation View



Elevation View

Note: Dike construction material specification is 24" or smaller rock, topped with finer road base.

PURPOSE: **DATUM:** MSL **ADJACENT PROPERTY OWNERS:** 1. BLM 2. Utah Division of Forestry, Fire and State Lands 3. Utah Trust Lands	**Figure 5. Typical Sections Drawings Showing Dike and Dike Roadway Construction** **APPLICATION BY:** Great Salt Lake Minerals Corp. P.O. Box 1190 Ogden, UT 84402	Proposed fill **IN:** waters of the United States **AT:** Great Salt Lake **COUNTY OF:** Box Elder **STATE:** Utah **DATE:** 2–17–09

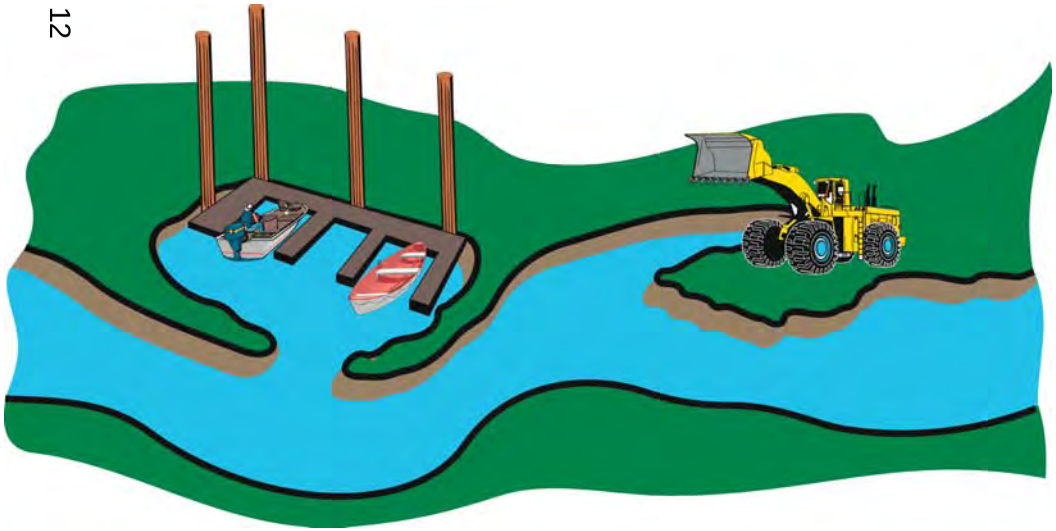
History

The U.S. Army Corps of Engineers has been involved in regulating certain activities in the nation's waters since 1890. Until 1968, the primary thrust of the Corps' regulatory program was the protection of navigation. As a result of several new laws and judicial decisions, the program evolved to one that considers the full public interest by balancing the favorable impacts against the detrimental impacts.

You Can Help

The understanding and support of the American people is vital to the success of this program. To protect our nation's water resources and assure their use and enjoyment for future generations, we must all join this vital effort. We ask your help in "passing the word" to others concerning the permit requirements outlined in this brochure and solicit your views and comments on better ways of attaining the goals of this program. Your comments, questions, and suggestions should be directed to one of our Regulatory Offices.

For additional information or to apply for a permit, please contact one of our Regulatory Offices or see our web site at ***http://www.spk.usace.army.mil/cespk-co/regulatory/***.



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US Army Corps of Engineers ®
Sacramento District

Permit Program

http://www.spk.usace.army.mil/cespk-co/regulatory/

Corps of Engineers Regulatory Program

Water is one of our nation's most valuable resources. It is becoming increasingly important that we protect the quality of our inland waters and wetlands for the use and benefit of future generations.

This brochure discusses the regulatory program of the U.S. Army Corps of Engineers: What it is, how it began, how it may affect you, and what you as a concerned American can do to help.

If you are planning work in a river, stream, lake, or wetand, a Corps permit may be required.

The program provides for the consideration of all concerns of the public (environmental, social, and economic) in the Corps' decision-making process to either issue or deny permits. As part of its responsibility to protect water quality, the Corps of Engineers Section 404 permit program extends to many areas that were not regulated prior to the Clean Water Act.

The purpose of the Clean Water Act is to insure that the physical, biological, and chemical quality of our nation's water is protected from irresponsible and unregulated discharges of dredged or fill material that could permanently alter or destroy these valuable resources.

What Work Requires a Permit?

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats, intake structures, and cable or pipeline crossings.
- Dredging and excavation.

Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material in the waters of the United States, including wetlands. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the United States or adjacent wetlands.
- Site development fills for residential, commercial, or recreational developments.
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.
- Mining, channalization, ditching or, sediment removal which involves more than "incidental fall-back" of dredged material.

Who Should Obtain a Permit?

Any person, firm, agency (including governmental agencies) planning to work in Navigable Waters of the United States, or place dredged or fill material in waters of the United States, must first obtain a permit from the Corps of Engineers. Permits, licenses, variances, or similar authorization may also be required by other Federal, State, and local statutes.

Waters of the United States

Waters of the United States include essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. "Wetlands" are areas characterized by growth of wetland vegetation (bulrush, cattails, rushes, sedges, willows, pickleweed, iodine bush) where the soil is saturated during a portion of the growing season or the surface is flooded during some part of most years. Wetlands include marshes, alpine wet meadows, vernal pools, playas, seasonally saturated depressions and similar areas.

The landward regulatory limit for non-tidal waters (in the absence of adjacent wetlands) is the ordinary high water mark. The ordinary high water mark is the line on the shores established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank: shelving; changes in the character of the soil: destruction of terrestrial vegetation: the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

Navigable Waters

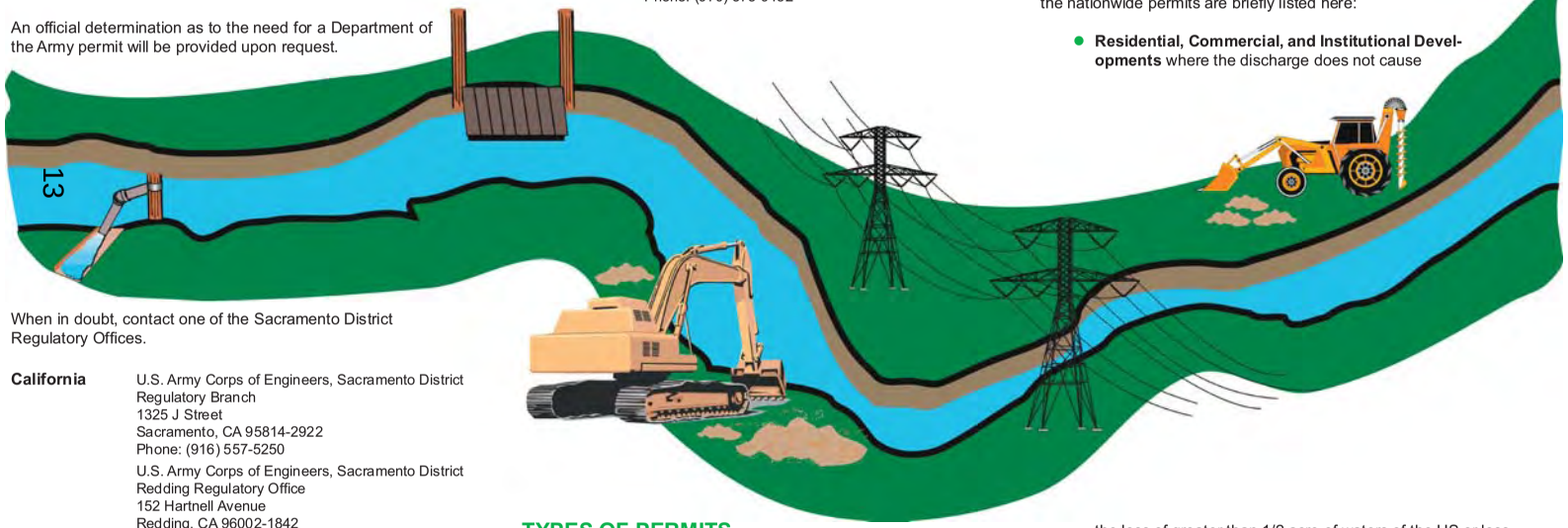
Navigable waters are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/ or Section 404 permits are required for construction activities in these waters. A complete list is available in the District Office and on our website at ***http://www.spk.usace.army.mil/cespk-co/regulatory/***.

Pre-Application Consultation

You are encouraged to contact the Sacramento District Corps of Engineers for proposed work in waters in this jurisdictional area (see map this side).

Exemptions, nationwide, regional and individual permit requirements will be reviewed. By discussing all information **prior** to application submittal, your application will be processed more efficiently.

An official determination as to the need for a Department of the Army permit will be provided upon request.



When in doubt, contact one of the Sacramento District Regulatory Offices.

California
U.S. Army Corps of Engineers, Sacramento District
Regulatory Branch
1325 J Street
Sacramento, CA 95814-2922
Phone: (916) 557-5250

U.S. Army Corps of Engineers, Sacramento District
Redding Regulatory Office
152 Hartnell Avenue
Redding, CA 96002-1842

Nevada
U.S. Army Corps of Engineers, Sacramento District
Nevada Regulatory Office
C. Clifton Young Federal Building
300 Booth Street, Room 2103
Reno, NV 89509-8126
Phone: (775) 784-5304

Utah
U.S. Army Corps of Engineers, Sacramento District
Intermountain Regulatory Section
533 West 2600 South, Suite 150
Bountiful, UT 84010
Phone: (801) 295-8380

U.S. Army Corps of Engineers, Sacramento District
St. George Regulatory Office
321 N. Mall Drive, Suite L-101
St. George, UT 84790-7314
Phone: (435) 986-3979

Northwestern Colorado
U.S. Army Corps of Engineers, Sacramento District
Grant Junction Regulatory Office
Wayne N. Aspinall Federal Building
402 Rood Avenue, Room 142
Grand Junction, CO 81501-2563
Phone: (970) 243-1199

U.S. Army Corps of Engineers, Sacramento District
Frisco Regulatory Office
310 W Main, Suite 202, P.O. Box 607
Kremmling, CO 80443-0607
Phone: (970) 724-9036

Southwestern Colorado
U.S. Army Corps of Engineers, Sacramento District
Durango Regulatory Office
278 Sawyer Drive #1
Durango, CO 81303-7916
Phone: (970) 375-9452

TYPES OF PERMITS

Individual Permits

Individual permits are issued following a full public interest review of an individual application for a Department of the Army permit. A public notice is distributed to all known interested persons. After evaluating all comments and information received, final decision on the application is made.

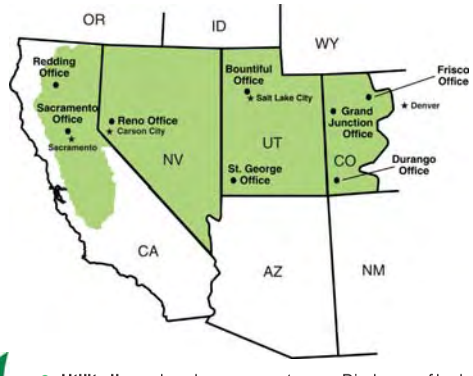
The permit decision is based on compliance with Section 404(b)(1) guidelines and the outcome of the public interest balancing process where the benefits of the project are balanced against the detriments. A permit will be granted unless the proposal is found to be contrary to the public interest or fails to meet the guidelines. Process time usually takes 60 to 120 days unless a public hearing is required, an environmental impact statement must be prepared, or compliance with other Federal laws Is required.

To apply for an individual permit, an application form along with plan and profile drawings must be submitted. The form Is available from our Regulatory Offices and on our web site at ***http://www.spk.usace.army.mil/cespk-co/regulatory/***.

Nationwide Permits

A nationwide permit is a form of general permit which authorizes a category of activities throughout the nation. These permits are valid only if the conditions applicable to the permits are met. If the conditions cannot be met, a regional or individual permit will be required. Text of the nationwide permits are available at our website. A few of the nationwide permits are briefly listed here:

- **Residential, Commercial, and Institutional Developments** where the discharge does not cause the loss of greater than 1/2 acre of waters of the US or loss of greater than 300 linear-feet of stream bed unless for intermittent streams written waiver is obtained. Advanced written notification is required if the discharge exceeds 1/10 acre of waters of the US, the discharge causes the loss of open waters, or the discharge causes the loss of greater than 300 linear-feet of intermittent stream bed.
- **Repair, rehabilitation, or replacement** of a structure or fill which was previously authorized and currently serviceable. The structure or fill must not be significantly changed.

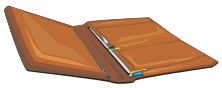


- **Utility lines** placed across a waterway. Discharge of bedding and backfill material is permitted if bottom contours are not changed.
- **Single projects of less that 25 cubic yards** of fill or excavation. Piecemeal work is not authorized. Advance written notification is required.
- **Bank stabilization** projects less than 500 feet long containing less than an average of one cubic yard of material per running foot. The activity must be necessary for erosion protection and may not exceed the minimum amount needed for erosion protection. Fill is not to be placed in wetland areas or in a manner that impairs water flow. Materials free of waste metal products and unsightly debris must be used and the activity must be a single complete, project.
- **Linear Transportation Projects** provided the discharge does not cause the loss of greater than I/2 acre of non-tidal waters or 1/3 acre of tidal waters. Advanced written notification is required if the discharge causes greater than 1/10 acre of waters or if the discharge occurs in a special aquatic site, including wetlands.

Regional permits are issued by the District Engineer for a general category of activities when (1) the activities are similar in nature and cause minimal environmental impact (both individually and cumulatively), and (2) the regional permit reduces duplication of regulatory control by State and Federal agencies.

Contact one of the Sacramento District Regulatory Offices, or see our website, for information regarding regional permits in your area.

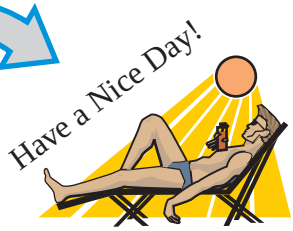
Jurisdiction Review Process



Wetland Delineation
or
Jurisdictional Request

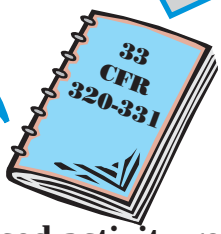
Is the project in a Waters of the US?

No



No Permit Required…

Yes



Is proposed activity regulated?

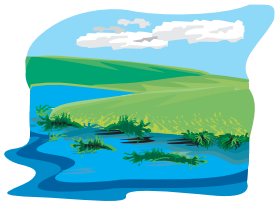
Yes

Submit Permit Application

No

No Permit Required…

Permit Application Review Process



Avoidance

Minimization

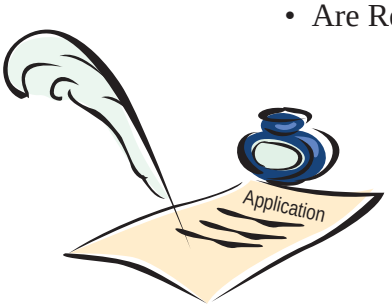
No avoidance

- Are individual and cumulative environmental impacts minimal?
- Is area of impact less than $^{1}/_{3}$ – ½ acre?
- Are Nationwide General Permit (NWP) criteria and conditions met?
- Will compensatory mitigation be needed to reduce impacts?

OR

- Are Regional General Permit (GP/RP) criteria and conditions met?

No Permit Required –
Life goes on …

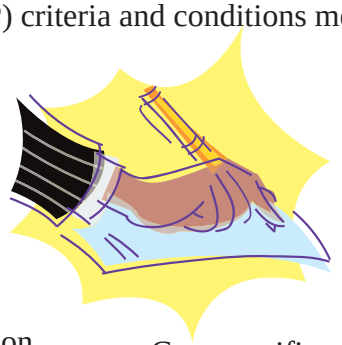


Application must be evaluated
as a Standard (Individual) Permit
(*see next page*)

No

Yes

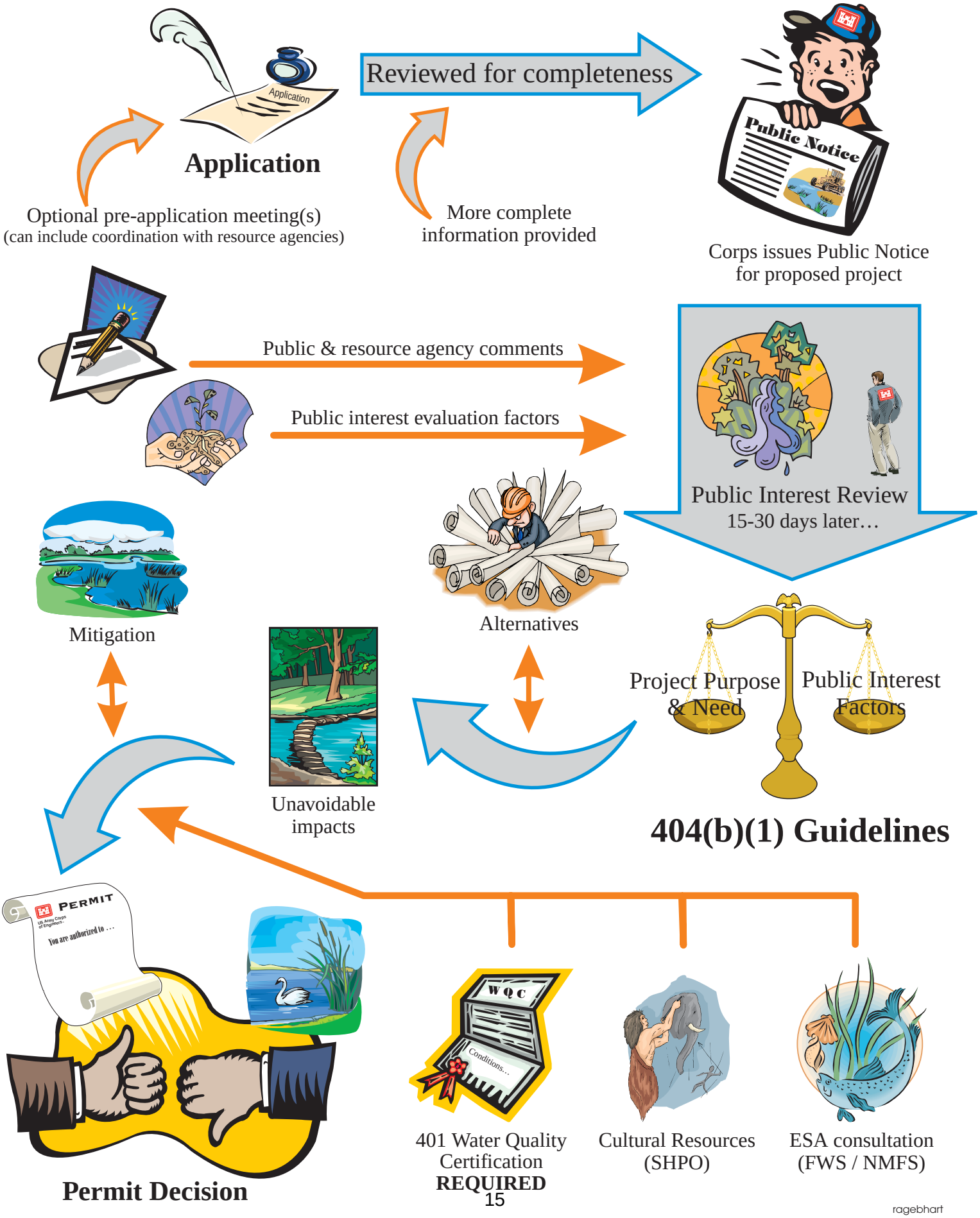
401 WQ Certification
SHPO concurrence
ESA consultation
Floodplain review
et. al.



Corps verifies
compliance with
NWP or RP

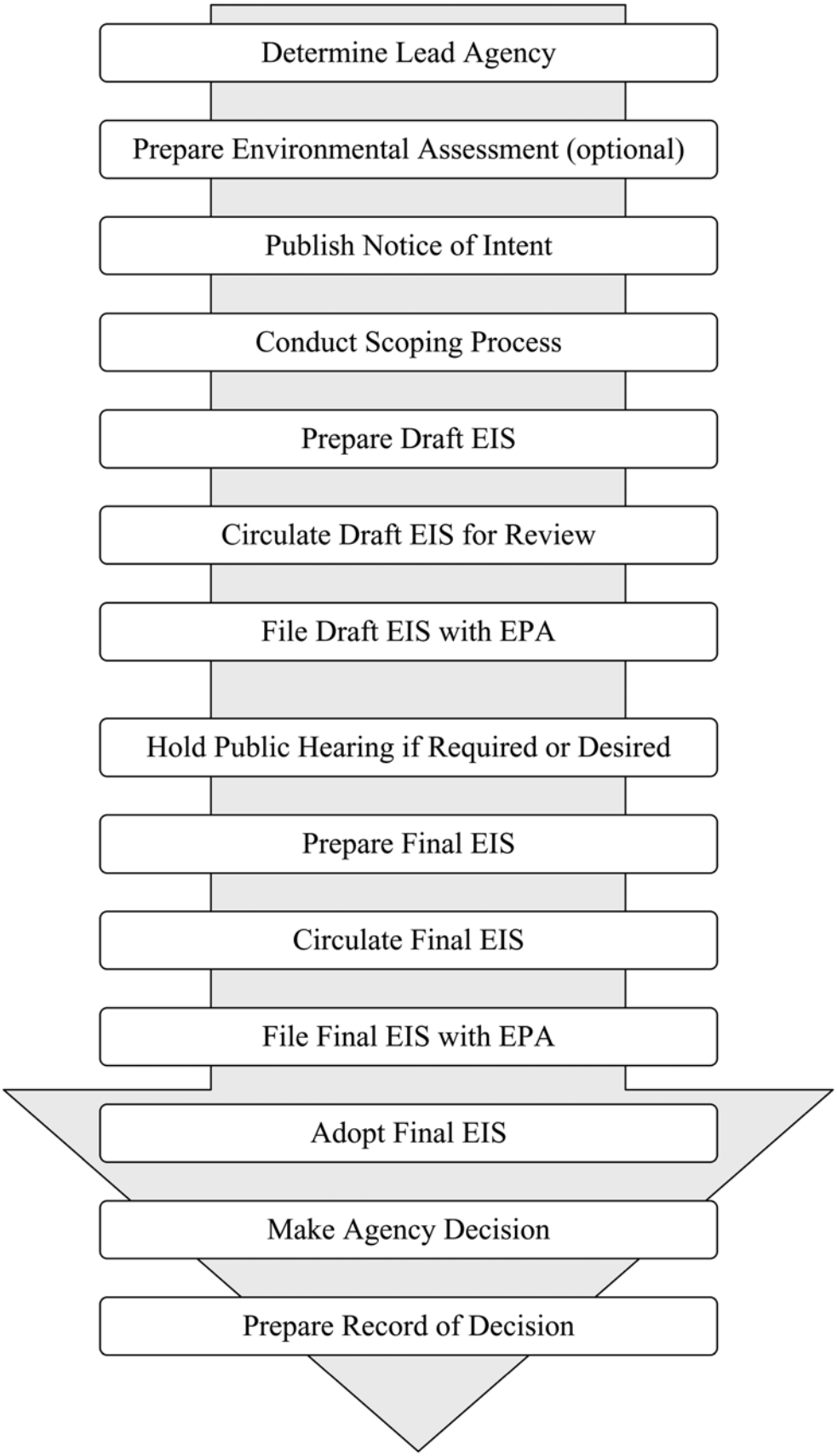
ragebhart

Individual Permit Review Process

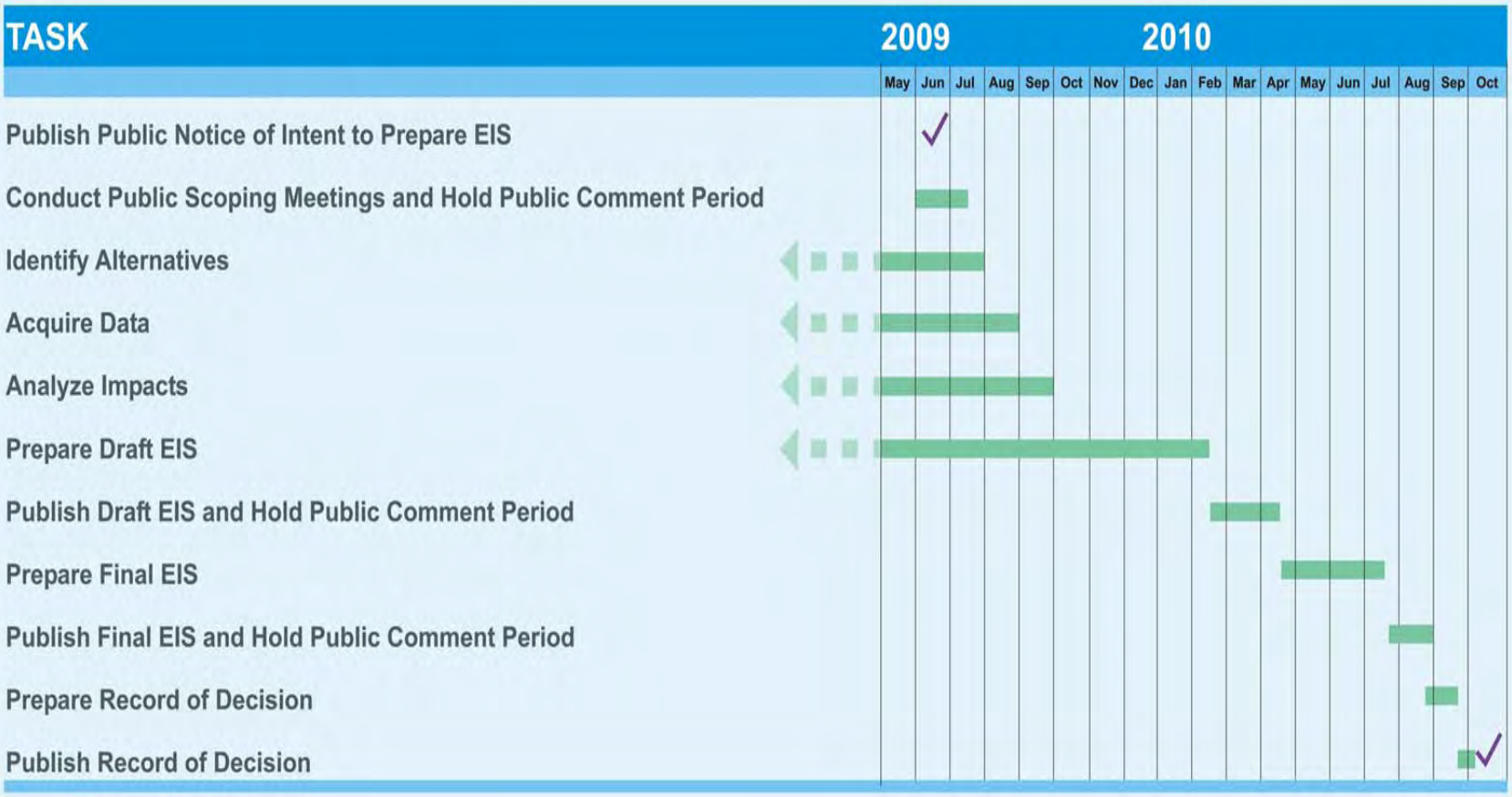


ragebhart

Steps in the EIS Process



Anticipated Environmental Impact Statement (EIS) Schedule



Alternatives under Consideration

No Action

In accordance with NEPA, the No Action alternative presents projections of current conditions to the most reasonable future conditions without the proposed action being implemented. Under the No Action Alternative no new evaporation pond would be constructed in Bear River Bay and no new evaporation ponds would be constructed in the Clyman Bay, Dolphin Island, or Lakeside areas of the lake. The Behrens Trench would not be improved through excavation or through installation of enclosed pipelines. GSLM would continue to operate at the same evaporation pond capacity at which it currently operates.

Proposed Action

Evaporation Pond Expansions

GSLM proposes to expand solar pond evaporation areas adjacent to existing ponds on the east and west sides of Great Salt Lake. The proposed expansions would add approximately 91,000 acres of evaporation ponds. A proposed 8,000-acre evaporation pond would be added to the existing GSLM east ponds in Bear River Bay, and three new solar ponds would be added to the existing west side complex: a 23,000-acre evaporation pond south of Dolphin Island, a 38,000-acre pond that would stretch north of Dolphin Island, and a 6,000-acre evaporation pond at the southern end of Clyman Bay.

GSLM is also seeking to obtain the use of a lease currently held by a private party in the Lakeside area that includes approximately 14,000 acres south of the railroad causeway and 2,000 acres north of the railroad causeway. If the use of the lease is obtained, GSLM would construct two evaporation ponds in the lease area.

Purchase SOP from U.S. Magnesium Corporation

GSLM would purchase raw potassium salts from US Magnesium and haul the SOP by truck to the Ogden processing facility until a new plant is built near existing US Magnesium facilities. Working with US Magnesium to optimize pond system operations to increase the amount of raw potassium deposit to a level that would may make it feasible to construct a scaled-down 60-acre SOP processing plant within the US Magnesium pond area. The resulting annual plant production would be approximately 90,000 tons of SOP. The scaled-down plant would be designed to produce only standard grade SOP with final product compaction and packaging being handled at GSLM's Ogden SOP plant.

Behrens Trench Efficiency Improvement

Since approximately 20 to 40 percent of the concentrated brine that flows through the Behrens Trench is lost in transport through dilution, efficiency would be improved by widening and deepening the trench for open water delivery of brine by dredging or delivery through the use of low or high pressure pipes.

Excavation of the trench to deepen and widen the trench with an enclosed pipeline would create an efficiency gain of 40,000 tons of SOP. The low pressure pipeline would be a 10-foot diameter flexible, polymer pipe. GSLM may initially install it in only the first 11 miles of the Trench, since this is the area with the worst dilution losses. A high pressure pipeline would consist of two 64-inch diameter poly, resin/mortar or coated-steel pipes, running 50 to 200 psi. Depending on materials, concrete weights would have to be installed every 10 to 15 feet to keep the pipeline from floating. Both the low and high pressure pipelines would need a system installed to purge air and water. The pipes would be laid in the existing Behrens Trench and operated annually for approximately 90 continuous days, typically from July 1st through the end of September. The pipelines would not be a way to increase the efficiency of Behrens Trench without re-excavating and deepening the Trench.

In order to accommodate the proposed ponds on the west side of the lake, the Behrens Trench would also need to be expanded in size to accommodate a flow of 60,000 gallons per minute. Dredging has been accomplished before in the same alignment. The west end of the Behrens Trench would be lowered by 15 feet and by 2 feet for the remainder of the Trench. The efficiency gain is estimated to be approximately 15,000 tons of SOP with existing ponds, and 150,000 tons if the proposed ponds are built.

Preliminary Practicable Alternatives to the Proposed Action

Evaporation Pond Construction

Various combinations of solar evaporation ponds described under the Proposed Action would be evaluated, as would their configurations, in order to avoid sensitive resources while still meeting project needs.

Alternatives Screening Criteria

U.S. Army Corps of Engineers' guidelines state, "[a]n alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." (40 C.F.R. § 230.10(a)(2))

Economic Criterion

While high costs will not always make an alternative impracticable, there are instances when high costs can defeat the purpose and need for a proposed action. For example, if an alternative results in an increase in production costs that is so great that it surpasses the economic gains from increased SOP production, this would make it impossible for GSLM to remain economically viable. This criterion is also often linked to the Logistical and Technical criteria since the cost of transportation, infrastructure, and technological requirements can often make an alternative economically impracticable as well as logistically and technically impracticable.

Technical Criterion

This criterion takes into account technological/technical issues that determine whether a particular alternative can be successful. Technological issues include factors such as whether or not a certain technology for improving pond efficiency exists. Technical issues also might include the conditions required for successful evaporation pond operation. For example, for an evaporation pond to be productive, rate of evaporation, soil conditions, and brine quality all have to meet certain standards.

Logistical Criterion

This criterion considers factors such as transportation needs, construction requirements, and equipment requirements. Because of the sheer size of Great Salt Lake, transportation and other logistical concerns are important factors in many of the possible alternatives. For example, transporting brine and/or salts from one area of the lake to another can often create significant logistical issues. Other logistical factors include things such as regulatory requirements and land ownership conditions. The logistical criterion is often linked to the economic criterion because difficulties with transportation, construction, and equipment can create situations that result in a cost prohibitive alternative.

Purpose and Need Criterion

This criterion takes into account the elements of the Proposed Action's stated purpose and need. The purpose and need has four elements that must be met:

- Maximize organic potassium sulfate (SOP) production capacity
- Use existing Great Salt Lake resources
- Maintain GSLM's economic viability and market share
- Help meet growing worldwide demand for SOP

Alternatives Considered but Dismissed from Detailed Analysis

Elevated aqueduct to replace the Behrens Trench

Dismissed due to economic, technical, logistical, and purpose and need criteria

Increase efficiency by covering ponds for nine months to reduce dissolution

Dismissed due to economic, logistical, and purpose and need criteria

Increase efficiency by covering ponds with permeable membrane

Dismissed due to economic, technical, logistical, and purpose and need criteria

Increase evaporation by adding chemical agent (dye) to ponds

Dismissed due to economic, technical, and purpose and need criteria

Increase evaporation by misting/spraying

Dismissed due to economic, technical, logistical, and purpose and need criteria

Purchase external potassium chloride

Dismissed due to economic and purpose and need criteria

Purchase potassium chloride mine

Dismissed due to economic and purpose and need criteria

Install equipment for thermal evaporation of recycle stream

Dismissed due to economic and purpose and need criteria

Develop an offsite pond on the east side to replace Bear River Bay pond

Dismissed due to technical criterion

Process salt dredged from Behrens Trench

Dismissed due to technical criterion

Trade for less sensitive lease areas

Dismissed due to logistical criterion

Build ponds offsite on Bureau of Land Management (BLM) lands

Dismissed due to logistical criterion

Build ponds in West Desert on private lands

Dismissed due to logistical criterion

Potential Issues Associated with the Proposed Action

Relevant Issues

Issues raised during the initial scoping period that were determined to be relevant and therefore to be addressed in the Environmental Impact Statement were:

Land Use

- Do the proposed alternatives that affect lands below the meander line follow the Great Salt Lake Comprehensive Management Plan and the Great Salt Lake Mineral Leasing Plan?

Seismic Activity

- Could seismic activity cause petroleum-product spills into the lake from pumping facilities, pipelines, and supply trucks?

Air Quality/Climate Change

- What are the potential impacts to air quality from the construction, full production, and operation of the solar evaporation ponds and the expanded processing plant?
- What are the carbon footprints of each of the project alternatives?

Water Quality and Circulation

- Would dike construction activities impact water quality?
- Would day-to-day operations of the proposed expansions impact water quality?
- Would flushing of the proposed expansion ponds affect the uptake of selenium, mercury, and other heavy metals into the food chain of the Great Salt Lake?
- Would flushing of the proposed Bear River Bay pond increase salinity of Bear River Bay and subsequently affect the lake ecosystem?
- Would pond flushing create nutrient loading in Bear River Bay?
- Would the Proposed Action affect biological oxygen demand (BOD) in the Great Salt Lake?
- Would the discharge of dredge or fill material (that is, creation of new dikes) change circulation of lake water by obstructing flow, changing the direction or velocity of flow, or by changing the dimensions of the water body?
- Could major new evaporation surfaces and the removal of large amounts of water from the larger lake system impact normal water fluctuations of the Great Salt Lake?

- Fresh water exchange between Willard Spur and Bear River Bay may be important to maintain ecological conditions and fisheries. Would the project affect this exchange?
- Would reduction in the open water area of the Bear River Bay cause nutrients from sewage and irrigation sources to become more concentrated?
- Would proposed expansions affect the salinity balance of the North Arm and other parts of the lake, including the South Arm?
- Would the proposed expansions impact designated beneficial uses of the lake's water?
- What would be the long-term impacts of salt extraction and pond flushing on the biotic community of the Great Salt Lake (algae, brine shrimp, brine flies, and birds)?
- What would be the cumulative water quality impacts of the proposed expansions in conjunction with past and reasonably foreseeable developments of the Great Salt Lake?
- What would be cumulative water quality impacts of the proposed expansions in conjunction with population growth and further development of the Wasatch Front (as this growth and development would increase demand for fresh water, likely resulting in less fresh water reaching the Great Salt Lake)?

Wetlands

- How will the proposed expansions impact the functions and values of wetlands and mudflats as special aquatic sites?
- How will the EIS address cumulative impacts to waters of the United States, including wetlands?

Avian Wildlife

- What are the water bird uses at various water depths in the area of the proposed Bear River Bay expansion pond and what habitat losses and shifts will result from the proposed expansion?
- Would the proposed Bear River Bay expansion eliminate shallow water areas and mudflats that are important loafing and feeding areas for waterfowl and shorebirds?
- Does the shoreline of the proposed Dolphin Island expansion pond provide habitat for shorebirds, including the snowy plover and American avocet? Could the proposed expansion impact this use?
- Would the proposed expansions impact avian use of the North Arm?

- What avian wildlife disruptions and mortality could occur from day-to-day operational activities occurring at expansion ponds (for example, noise, lighting, vehicles, pond flushing, and land vibrations)?
- Would proposed Clyman Bay expansions impact avian nesting on Gunnison Island?
- Would construction of the Dolphin Island Pond affect wildlife use in uplands or wetlands adjacent to the west side of the proposed pond? Could wildlife in the area, particularly nesting raptors, be disturbed?
- Would new dikes facilitate human access to Gunnison Island during low lake levels? Similarly, would humans have increased access to critical habitat areas of Bear River Bay, thereby increasing disturbance of avian wildlife?
- Could birds become concentrated in a smaller area within Bear River Bay and Willard Spur, thereby increasing chances for botulism outbreaks, avian cholera, or other diseases?
- Would the proposed Bear River Bay expansion increase access of mammalian predators to known migratory bird foraging, roosting, and nesting sites?
- Would new dikes for the proposed Dolphin Island expansion act as predator conduit to Gunnison Island? Additionally, would these dikes become a roosting site for fledgling pelicans, further exposing them to predators?
- What are the cumulative impacts of the proposed expansions on wildlife habitat in the context of past and future mineral and oil and gas developments in the North Arm and Bear River Bay?

Recreation and Aesthetic Values

- Recreational uses of Bear River Bay and Willard Spur include bird watching, boating, guided trips, and waterfowl hunting. Private duck clubs are located in the vicinity. Would waterfowl hunters have concerns regarding recreational access and effect on waterfowl? Would public use be concentrated in a smaller area, thereby impacting navigation and recreational values?
- How will the proposed project impact aesthetic values of the Great Salt Lake?

Cultural Resources

- Would the proposed project adversely affect any cultural resources (historic, archaeological, Native American)?

Socio-Economics

- Would the proposed expansions have impacts on the brine shrimp industry?
- How does minerals extraction from the Great Salt Lake contribute positively to the state's economy through jobs, taxes, and royalties?

Not Relevant Issues

An issue was considered not relevant for any of the following:

1. The issue was outside the scope of the proposed action or likely alternative;
2. The issue was conjectural and could not be supported by scientific evidence or rational evaluation;
3. The issue has already been decided by law, regulation, or higher-level decision; or
4. The issue was irrelevant to the decision to be made.

Issued determined to be not relevant to the proposed action and the rationale for each are:

Could increased evaporation from Great Salt Lake alter the "lake effect" responsible for much precipitation, particularly snowfall, along the Wasatch Front?

Existing knowledge indicates that evaporation is not one of the factors that cause "lake effect" storms. Of the known factors that do cause lake effect, the acreages involved in the proposed solar ponds are not considered consequential. This was determined based on personal communication with W. James Steenburgh, University of Utah, Department of Meteorology and from technical papers on the subject (Steenburgh 2008 pers. comm.; Steenburgh et al. 2000; Halvorson 1999).

What would be the cumulative water quality impacts of the proposed expansions in conjunction with impacts of climate change due to global warming?

This issue is not relevant for the analyses to be completed in the EIS. There is broad-based scientific consensus that the Earth's average surface temperature is increasing due to human-generated increases in greenhouse gas concentrations (BRAC 2007; IPCC 2007). In contrast to temperature, however, there is greater uncertainty regarding the implications of climate change for precipitation. Utah is located in a transitional zone where there is less confidence in predicting future precipitation trends; it is possible that precipitation could increase. Effects of global warming on freshwater inflows and average lake levels that effect water quality of the Great Salt Lake are uncertain (BRAC 2007, Steenburgh 2008). Therefore, this issue is conjectural and cannot be evaluated by scientific evidence. However, the EIS will model for higher than average water and lower than average water levels, based on the best available scientific information for reasonably foreseeable conditions.

Over the long term, the North Arm may become more important as avian habitat than it is currently. Dikes and evaporation ponds in Clyman Bay may be in place for several decades. Within that time frame, could the causeway be breached or actions taken to better circulate the lake's waters?

Possible breach of the railroad causeway is speculative and is not part of any existing plans for management of the Great Salt Lake.

There is a chance that flooding could increase bird use of the north arm, but if flooding occurs the evaporation ponds would be out of use, making this issue moot. This issue will be explained in further detail in the EIS.

While the Corps does not anticipate concerns for Threatened and Endangered Species (as indicated in the Public Notice), shouldn't the project area be inventoried in accordance with the Endangered Species Act?

The USFWS has confirmed that there are no concerns for federally-listed Threatened and Endangered species in the project area. While the issue is not a relevant concern for the project, the EIS will include a literature review describing habitat requirements for TES and state-listed sensitive species in Box Elder County and will describe the suitable or potentially suitable habitats for these species within the project area.

Secondary impacts on anglers and angling revenue may occur. Bear River Bay and Willard Spur provide an important resource for piscivorous birds. If this resource is impacted, would it result in increased bird use of fishery resources at hatcheries or other lakes and streams?

These impacts are speculative and not reasonably foreseeable. Should the EIS determine that piscivorous birds would be displaced by the proposed expansions, it would not be practicable to further determine if or where various species may disperse or what effect this could have on fisheries resources for a given body of water or cumulatively. Fish hatcheries likely already implement measures to reduce predation losses.

U.S. Army Corps of Engineers Public Meeting for Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

If you have additional comments or issues, please take the time to express them in writing. Please submit your written comments by July 9, 2009.

Comment Form

Name: _____ **Address:** _____

_____

_____

Representing (optional): _____ **Self** _____ **Other** (please specify) _____

Comments or Concerns:

_____

_____

_____

_____

_____

_____

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fold over

BIO-WEST, Inc.
1063 West 1400 North
Logan, UT 84321

place postage here

Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

fold over

Notes

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 4, 2009
5pm - 8pm

Public Meeting: Davis County Library
725 South Main Street
Bountiful, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Chris Slocum	869 E 700 S. Clearfield UT 84015	Self/UMMA
Ron Bryan	9900 W. 105th St. Overland Park KS 66210	GSL.
Josh Noble	1341 N 325 E Layton UT 84041	UMMA
Hal Belhap	144 W 1500 S. Bountiful UT 84010	SELF
Scott Stoddard	3326 S. 400 E Bfl, UT 84010	SELF
Jay Vance	594 Sidar Dr. North Salt Lake, UT 84054	SELF
Karl Hook	3326 S. 350 W Bountiful UT 84010	
Jeff Pace	4853 Cherrywood Lane West Valley City Ut. 84120	DU & UAB UMMA
Lana Gomez	653 A South 1300 East SLC UT 84102	Des News Friends of Great SL.
NELS TIMM	3159 SUNSET HOLLOW DR BOUNTIFUL	SELF
Robert M. Eggett	555 N. 400W. #21 Layton, Ut.	801-295-3153

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Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Ken Anderson	P.O. Box 896, Provo UT	Bottom Line
Bob Carter	3507 So. Huntington Dr. Bountiful, UT 84010	Excellence to Market
Bob PLATT	2180 N 1950 W SLC	TRX COMMUNICATION
Werner Ruemmele PE	1217 N 950 E Bntfl. 84010	self
DON JOHNSON	1071 E 250 NO BTFL	DESIGN DEVELOPMENT
Bob Boyle	3104 E Tanglewood Layton UT	GSL/Self
JEFF BRINGHURST	1470 PIMLICO PL. SANDY UT.	UTAH MUD MOTOR ASSC.
Fred Holzer	1017 E. 255 So, Bntfl, UT	Self.
Del Callicotte	1161 So 500 W Bntfl UT	self
Judith Callicotte	" " "	self
DAVID PARKER	1378 N. 560 E, BOUNTIFUL UT	"

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Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Tyson Rasmussen	602 E 600 So Layton, UT 84041	Umma / UBA
Brandi Noble	1341 N 325 E Layton, UT 84041	Umma/UBA
R Jefre Hicks	6680 So 475 E So Weber UT 84405	UABI
John Ray	168 Rolling Hills Drive Centerville UT 84014	UWA
Dianne Stoddard	3326 S. 400E. Bountiful, UT 84014	-
Allen L. Vance	1557 Emerald Hills Dr. Bountiful UT 84010	Self
Brent Eyre	5198 So. Persille Dr Taylorsville, UT 84118	"
Sheryl Eyre	" " "	
Malorie Eyre	" " "	
Audrey Brady	" " "	
LYNN A. PACE	4853 CHERRYWOOD LN. W. V. S. UTAH	THE PUBLIC

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Bountiful, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Steve Smith	1639 Lakeview Dr. Bountiful UT 84010	UT Wtr Fowl Assn
Corey Anderson	1221 575 W Clinton UT 84015	North Shore Limited Partnership
Melvin J. Mills	6 No. 1375E Bountiful, Ut	self
Bob Eriksson	1973 S. 100 W. Clearfield, Ut.	GSL

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 9, 2009
5pm - 8pm

Public Meeting: Comfort Suites Hotel
2250 South 1200 West
Ogden, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
THEODORE & ANN ALENE DUNN	987 E. 5400 South Ogden, ut 84405	
Eddie & Alice LaRue	5544 W 1400 N. Ogden ut 84404	
Stephen Joyner	444 E 3000 N North Ogden	G.S.L.
Marla Joyner	" "	G.S.L.
Craig Miller	PO. Box 146201, Utah Div Water Res, SLC, UT 84114-6201	Utah Water Res
Tom S. Burton	5031 Glasmann Way Ogden, UT 84403	GSL
Ron Purser	1264 Craig Circle Ogden ut 84404	MRI
Don A. Child	1060 W. PLEASANT VIEW DR PLEASANT View UT 84414	self
Lynn Kunzler	1594 West North Temple SLC UT 84114	DOGM
Steven Goen	727 N. HOPE Circle LAYTON, UT 84040	
Dave Meacham	2859 W 850 E N. Ogden ut 84414	—

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009
5pm - 8pm

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Charles Willis	5670 S. 1475 E 4A	Self.
[illegible]	5670 S 1475 E 4A	Self
Vivien Cannon	673 E. Rosewood Ln. Layton	Self
Larry Invenes	1566 Sunrise Dr. Ogden	Self
Justin Kinghorn	5038 S. Viking Dr Ogden	Waterfowl / Self
Chuck Martin	4620 So Bridgeline DR.	Window maker Berry Co.
Dan Bedford	2472 Custer Ave	self
Will Spar	3665 S 3750 W	self
Corey Anderson	1212 N. 575W. Clinton Ut 84015	North Shore Limited Partnership
Bruce Ferre	4618 W 2800 S Ogden Ut 84401	Self / Western Weber Co Planning Com.

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009
5pm - 8pm

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Pat Valerio Smoich	1637 E 1350 S. Ogden Ut	
Sylvia E. Nisio	1842 W. 5075 S. Rox, Ut.	
Carol Milne	1066 N. 3650 W Ogden Ut 84404	
Heather Milne	10606 N. 3650 W Ogden UT 84404	
Robert Cannon	673 E. Rosewood Ln., Layton, UT 84041	
Yaeko Bryner	1323 30th St. Ogden, Utah 84403	
K Stevenson	1413 29th St. OGDEN UT 84403	
R Jefre Hicks	6680 So 475 E So Weber UT 84405	UABI
Aaron Gibby	92 W. 870 N. Sunset UT 84015	UABI
ROB + SANDI DUBUC	2718 N 2125 E LAYTON UT 84040	
Robert Sahlstrang	3061 N 1050 W Pleasant View UT 84414	

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 9, 2009
5pm - 8pm

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Blynn Simmons	1990 W. 3300 So Ogden, UT	Public
Kevin Smith	3206 N. Pelican Drive Farr West Ut.	
Candace Barnes	2211 N. 1200 W Clinton Ut. 84015	GSL
Melissa Truscott	5924 S. 2700 W. Roy UT 84067	GSL
Ken Warnick	5772 S. 1075 E Ogden Ut 84405	Self
Lester R. Talbot	4327 S. 2325 W. Roy UT 84067	self
Jesse Gardiner	4628 S 3950 W Roy, Ut 84067	Self
Sandy & Larry Strong	2453 W 4800 S. Roy Ut. 84067	GSL
Dennis Downing	1372 Lark Cir Ogden UT 84403	Self
Keith Ashdown	193 E Pleasant View Dr N. Ogden 84414	GSL
Tammy Martinson	PO BOX 158 Hooper, UT 84315	All Trades / (GSL)

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009
5pm - 8pm

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
MARK TREMONTE	336 Church st Layton UT 84041	Self
Janet Judkins	1590 N. 4150 W. Ogden ut 84404	Self
Don Judkins	1590 N. 4150 W Ogden Ut 84404	Self
John Young	4990 N. Hwy 38 Brigham City, UT 84302	Young Bros. Livestock
Jerame Nye	5341 S. 4100 W. Roy Ut 84067	self
Gaye Anderson	1990 W 3300 S W. Haven 84401	Mineral Resources Int
Pat Reynolds	2147 W 5025 So Roy Ut. 84067	self
Mg Reynolds	2147 W 5025 So Roy Ut 84067	self
Randy Creager	210 N. 1900 West, Salt Lake City 84134	USTC
Carolyn McGrath	1971 N. 3175 E. Eden UT 84310	self
DAVE CASPERSON	4163 W. 4000 No. PLAIN CITY, UT. 84404	SELF

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 9, 2009
5pm - 8pm

Public Meeting: Comfort Suites Hotel
2250 South 1200 West
Ogden, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
MARK WORKMAN	2257 OAK FOREST LAYTON, UT	SELF
Tom Fehr	5025 Adams Avenue, Suite 300, Ogden, Utah 84403	Self
LAVERA L. PARRIS	3895 Quincy Ave Ogden, UTAH 84403	Self
John Larson	1739 Calloway St Ogden UT 84401	MRI
Richard Garr	1858 South 4200 West Ogden, UT 84401	Self
David Dewey	3246 Newcastle Cir Syracuse UT 84075	self
Brandon Flyer	381 N Washington Blvd #B203 Ogden UT	Self
Paul Baker	1594 W. N. Temple, SLC 84116	DOGM
Jerrine Killian	5881 S 850 E SOgden 84405	SELF
Paul H. Johnson	715 S. 400 E., Farmington, Ut 84025	Self & North Shore Limited Partnership & Morton Resources Int'l Inc.
Bob & Sally Neill	2567 E Pringle Cir Ogden 84403	Self

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 9, 2009
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Public Meeting: Comfort Suites Hotel
2250 South 1200 West
Ogden, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Ted McGrath	PO 177; Eden, UT 84310	Concerned Citizen
Marilyn O'Dell	1120 Canyon Rd #26 Ogden 84404	
Charlene Roper	2890 N. 3650 W. Ogden, UT 84404	concerned citizen
Dave Del Carlo	3942 Evergreen Drive, Pleasant View UT	
Paula Del Carlo	3942 Evergreen DR Pleasant View UT	
Brad Bryner	108 E. 5050 S. Og. Ut.	
JD Casperson	2845 N 5150 W Plain City UT 84404	concerned citizen
Chris Gielinski	6128 S 1350 E S. OGDEN UT 84405	
[illegible]	3813 W 5675 W Roy Ut. 84067	
Ron Costel	1551 Mtn. Rd, Logan UT 84321	self
Chad Russell	7226 5400 So SO OGDEN UT 84405	Self

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 9, 2009
5pm - 8pm

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Ogden, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Steve Peck	1926 Ruger Place, Farmington, UT 84025	
Matthew Anderson	4977 W. 3450 S. West Haven	MRI / self

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 11, 2009
5pm - 8pm

Public Meeting: West High School
241 North 300 West
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Corey Bethel	5528 S. 3100 W. Roy Utah 84067	GSL
JEFF BRINGHURST	1470 PIMLICO DL. SANDY UT. 84092	UTAH MUD MOTOR ASSOC.
Dustin Gleed	1801 W North star Dr. SLC ut 84116	UTAH mud motor Assoc.
Tanner Tilby	6079 Eagle Nest Dr. Murray ut 84123	Utah Mud Motor Assoc.
George E. Ryper	1433 Redondo Ave SLC UT 84105	Former USGS
Woods Silleroy	2174 Fairdown Ave Holladay, UT 84121	
Lars Johnson	2475 W. Lower Lake Ln Park City UT 84098	
Joel D. Martin	630 E 1980 N N. Logan UT 84341	
Bob Adler	2915 E. Oakhurst Dr. SLC UT 84108	self
Corey Harris	1999 Seven Oaks Ln Draper UT 84020	Utah Airboat/self
Nancy Carruthers	1650 Harvard Ave SLC UT 84105	self

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 11, 2009
5pm - 8pm

Public Meeting: West High School
241 North 300 West
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Scott Dwire	1920 LAIRD DR. SLC, UT 84108	FoGSL
Steve Erickson	444 Northmont Way SLC 84103	GBWN
Calvin Fong	Huffman-Broadway Group	GSLM
Jared Birth	1947 St Marys Dr. SLC 84108	
Becky Holt	588 E 1700 S. SLC, UT 84105	
Wayne Martinson	549 Cortez ST SLC UT 84103	Audubon
Chris Hancock	1191 L. 10875 So. So Jordan UT 84095	
Rory Williams	1128 E. 3125. N. Layton, UT 84040	self
Josh Noble	1341 N 325 E Lgto. UT 84041	UMMA
Chuck Harsin	4620 So 500 W Ogden UT 84405	UMMA
Ann O'Connell	352 South 1000 East SLC, UT 84102	

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 24, 2009
5pm - 8pm

Public Meeting: West High School
241 North 300 West
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Mark Lamm	OCEAN Star International 65 No. Stone Rd. Snowville UT 84336	
Jorge Morales	" " "	"
ROBERT LAND	4608 S. WELLINGTON HOLLADAY UT 84117.	
Jeff Salt	P.O. Box 522220, SLC, UT, 84152	Great Salt Lakekeeper.
Laura Tanner	7935 Danish Ridge Way SLC, UT 84121	Self
BRUCE HEATH	9363 SOLENA WAY, SANDY, UT 84093	GREAT SALT LAKE AUDUBON
Katie Pearce	577 7th Ave SLC UT 84103	Birds —
Dave Myers		GSL
Nathan Darnall		US FWS
Cindy Lynd	2443 High Mountain Dr. Sandy UT 84092	Friends of Great Salt Lake
DAVE HANSCOM	1451 MORAY CT. PARK CITY, UT 84060	self

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 24, 2009
5pm - 8pm

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
Dustin Gleed	1801 w North Star Dr. SLC ut 84116	WHH Mud Motor DBSC
Emily Gaines	292 W Galena Park Blvd #723 Draper UT 84020	
Matt Ward	777 E South Temple 8G SLC 84102	self
Wade Hancock	1191 w 10825 so so Jordan ut 84095	DWA
Andy Taylor	479 cherry Dr. Riverdale	UMMA
Bill Damery	WATER Quality 288N 1460 W SLC 84114-4870.	STATE WATER Quality
Elisabeth Epperson	44 W Broadway th SLC UT	
~~[illegible]~~		

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

June 24, 2009
5pm - 8pm

Public Meeting: West High School
241 North 300 West
Salt Lake City, Utah

Attendance Roster

Please Print

NAME	ADDRESS	REPRESENTING
JEFF BRINGHURST	1470 PIMLICO PLACE SANDY UT	UTAH WILD MOTOR ASSOCIATION
JODI GARDBERG	288 NORTH 1460 WEST SLC UT	UTAH DIV OF WATER QUALITY
HEATHER DOVE	2072 RAINBOW POINT DR SLC UT	GREAT SALT LAKE AUDUBON.
DONALD C. DEW	8341 W. HERZOG AVE; MAGNA UT 84044	SELF
Jamie Griffith	777 E. South Temple #86 SLC	self
Chris Hancock	1191 W. 10875 so so. Jordan UT	Utah waterfowl A.S.C.
John M. Mbaku	2258 E 3500 N, Layton, UT	Self
Chuck Harvey	4620 So 500 W Ogden Ut	Widow maker Boats
Christian Yang	84102	

APPENDIX C

AGENCY COMMENTS DURING FIRST SCOPING PERIOD

AC-1

Subject: FW: Great Salt Lake Minerals project #200700121
Date: Tue, 4 Dec 2007 08:32:48 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Great Salt Lake Minerals project #200700121
Thread-Index: AcgylT/L+C60rhXLQlWSjDXSP8CFJgD/g2Ow
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:32:49.0726 (UTC) FILETIME=[4F3895E0:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:32:50 -0700 (MST)
X-Spam-Status: No, score=-2.182, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,SUBJ_HAS_UNIQ_ID
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

-----Original Message-----
From: Mike_Nelson@blm.gov [mailto:Mike_Nelson@blm.gov]
Sent: Thursday, November 29, 2007 7:36 AM
To: Gipson, Jason A SPK
Cc: Pam_Schuller@blm.gov; Dave_Murphy@blm.gov; Greg_Thayn@blm.gov; Loretta_Sutton@ios.doi.gov; Peg_Sorensen@blm.gov
Subject: RE: Great Salt Lake Minerals project #200700121

Jason,

Please consider this email to be the official comments of the Bureau of Land Management (BLM) Salt Lake Field Office on the Notice of Intent to prepare an environmental impact statement for the proposed Great Salt Lake Minerals pond expansion project in Box Elder County, Utah #200700121.

The Bureau of Land Management is the owner of a large percentage of the shoreline lands adjacent to this proposed pond expansion project located on the west side of the Great Salt Lake. We believe there is a high potential for impacts to federal lands in connection with this proposal in the following ways:

1) The boundary between the upland owners and the State of Utah on the west side of the Great Salt Lake, while surveyed, it is not well marked in the area and as a result, we believe there is a high potential for impacts to the surface of public lands due to increased vehicle activity. This activity could result in damage to existing improved and unimproved roads in the area AC-1.01

as well as the potential creation of new roads from construction activity related to the dikes and evaporation ponds. In addition, there could be the need for the proponent to establish staging areas for parking vehicles or storing materials on upland lands to support the construction of the evaporation ponds. These kinds of activities must be permitted through a right-of-way issued by our office. We have not had contact with the proponent regarding the potential use of public lands for this purpose. Inceased motor vehicle activity of the lands could have a negative impact to the surface of lands by widening or creating new roads or staging areas and increasing the potential for soil erosion and potential affects on wildlife in the area.	AC-1.01 (continued)
2) We believe there is a potential that the proponent may need to extract mineral materials consisting of sand, gravel, soil, or fill material from public lands to support the construction of the dikes, berms, or roads necessary to create the solar ponds. Any use of mineral materials from public lands must be purchased from BLM under a mineral material sales contract. Once again, we have had no contact with the proponent regarding the purchasing of this material from us. Removal of mineral materials tends to be a major impact to the surface and can result in the removal of large areas of surface vegataion resulting in increased probability of erosion and loss of wildlife habitat.	AC-1.02
3) We have reason to believe that there could be an adverse affect on shorebird habitat along the west side of the Great Salt Lake as a result of the construction of the ponds. This habitat is significant to both migratory and endemic shorebird species. Careful consideration must be given to any significant fluctuations in salinity that may be caused by the concentrating of brines and increased salinity which could impact habitat. These shorebirds are also a significant prey base for migratory raptors in the area. We urge that there be good coordination with Utah Division of Wildlife and US Fish and Wildlife Service personnel as they have high levels of expertise (biological as well as jurisdictional) for these species.	AC-1.03

As a result of our concerns and the potential for impacts to public lands and resources, we request cooperating agency status on this EIS process. Please address cooperating agency letters to Glenn Carpenter, Salt Lake Field Manager, 2370 S. 2300 W., Salt Lake City, Utah 84119.

If you have any questions regarding our concerns as described above, you may contact me directly either by email or by phone 801 977-4355.

Mike Nelson
801/977-4355

Public Lands Policy Coordination Office
LYNN H. STEVENS
Director

5110 State Office Building - Capitol Hill – P.O. Box 141107- Salt Lake City, Utah 84114-1107
Phone: (801) 537-9801 Fax: (801) 538-9727

State of Utah
JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

FACSIMILE COVER SHEET

Date: December 3, 2007
Time: 4:10 pm
Number of Pages Including Cover Sheet: 9

TO: Jason Gipson	***FROM:*** Carolyn Wright
FAX NO: 801/295-8842	

Comments: SPK-2007-00121

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If you receive this communication in error, please notify us immediately by telephone and return the original message to us at the address above via regular U.S. mail.

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

JOHN HARJA
Director

RESOURCE DEVELOPMENT COORDINATING COMMITTEE
Public Lands Section

November 28, 2007

Mr. Jason Gipson
US Army Corps of Engineers
533 West 2600 South
Suite 150
Bountiful, Utah 84010

SUBJECT: Public Notice No. SPK-2007-00121
Project No. 07-8597

Dear Mr. Gipson:

The Resource Development Coordinating Committee (RDCC) has reviewed the Army Corps of Engineers (ACOE) Notice of Intent to prepare an Environmental Impact Statement for the Great Salt Lake Minerals (GSLM) Solar Evaporation Ponds Expansion Project within the North Arm and Bear River Bay areas of the Great Salt Lake (GSL). State agencies comment as follows:

AC-2

Division of Oil, Gas and Mining

This permit will require a revision to the mining and reclamation plan after the 404 permit is issued. Coordination during the EIS process is requested to maximize efforts and minimize conflicts. AC-2.01

Division of Wildlife Resources

AC-3

Potential impacts to Clyman Bay and Bear River Bay salinity, habitat, and ecology

The GSL has hemispheric importance to migratory waterbirds (waterfowl, shorebirds, and wading birds), as many species use the lake for nesting, feeding, and staging areas. At times, millions of birds may be found on GSL and the surrounding wetland/upland habitat complexes. Because GSL is a dynamic system, with the lake elevation changing seasonally and annually, the AC-3.01

5110 State Office Building, PO Box 141107, Salt Lake City, Utah 84114-1107 • telephone 801-537-9230 • facsimile 801-537-9226 • 801-538-9727

AC 3.01
(Continuing)

abundance and location of habitats continually change over time. These changes create a continual diversity and continuity of available habitats, such that wildlife will move around GSL to find those habitats, which supply their needs. It is in part because of this habitat diversity that GSL has become critically important to wildlife, with the lake sometimes supporting over half of the worldwide populations of eared grebes, American avocets, snowy plover, California gull and white-faced ibis.

When trying to understand wildlife populations on GSL, the waters and habitats within and surrounding the lake environment must be evaluated in the context of the current lake elevation, along with an understanding of the ever-changing water elevations and precipitation events. Dikes for evaporation ponds effectively constrain the waters of the GSL. The effect is to reduce the extent of the lake's natural littoral zone. In many areas, the natural shore of the GSL has a low gradient bottom and slopes gradually from the shore into the water, creating expansive shallow water environments. Avian use of the GSL waters and habitats can shift greatly with these subtle changes in lake elevation because of the low gradient bottom.

The EIS should analyze whether the presence of evaporation ponds in both Clyman Bay and Bear River Bay may eliminate a large portion of mudflat and shoreline habitat made available as wildlife habitat during these dynamic shifts in lake elevation.

Both birds and evaporation ponds require the same type of habitat (extensive mudflat and shallow littoral zones surrounding GSL). The extent of these areas is limited, given the long-term average of the lake and all of the current development within these areas. Evaporation ponds (GSLM ponds and other companies' ponds) currently cover 118,153 acres. At low lake levels, the salinity concentration increases in the north arm to levels beyond what wildlife and invertebrates can tolerate, which is an environment similar to evaporation ponds. Between the developed ponds and the high salinities of the North Arm, at low lake elevations, the total lake and pond area unsuitable for bird habitat around the lake increases to 480,429 acres. This accounts for 43% of the current total lake and pond surface area, leaving only 57% of the total potential habitat available for bird use. This underscores the tremendous value of the remaining habitat. The creation of additional ponds would remove even more habitat from this already diminished habitat base for waterbirds. The EIS should analyze the cumulative effects of these and other influences on GSL and its avian wildlife. We recommend the ACOE to evaluate the additive nature of such large-scale impacts on birds. The following points should be analyzed under the EIS:

AC-3.02

- The effects the project may have on migrating and breeding birds utilizing these habitats at a variety of lake levels and associated salinities.

- The cumulative impacts on GSL from the mineral evaporation pond creation, operation,

AC-3.02 (Continuing)

and maintenance. The foreseeable future impacts to both Clyman Bay and Bear River Bay from the proposed GSLM project expansion, evaluated in the cumulative context of habitats and waters already lost during the past 40 years of mineral extraction processes.

- Whether the construction, operation, or maintenance of the evaporation ponds affect levels of heavy-metal contaminants such as selenium or mercury (via stirring up lake sediments during construction; flushing of brine/salts from the ponds; etc.)? If so, the potential impacts to resident and migratory waterbirds. Whether the contaminants may enter the water column and then move through the food chain (algae, brine flies, brine shrimp, birds). Within the last 3 years, a food-consumption advisory was issued jointly by the state Department of Health, the Department of Environmental Quality, and the UDWR, regarding high levels of mercury, in particular, in the flesh of 3 duck species (northern shoveler, common goldeneye, and cinnamon teal) inhabiting GSL environments. AC-3.04

- The potential long-term impacts to water quality and salinities associated with the removal of salts from GSL. What are the long-term impacts to water quality, salinities, and the biological values stemming from flushing salts from the ponds in "pulses" into Bear River Bay and with "moving" the salts from Clyman Bay to Bear River Bay? What are the potential impacts to algae, wildlife, brine shrimp populations, and the general ecology of each area? AC-3.05

Wildlife concerns associated with Clyman Bay:

Potential impacts to Gunnison Island nesting birds

The EIS should consider whether the construction process and proximity of the lease to Gunnison Island may disrupt nesting of American white pelicans, California gulls, and peregrine falcons. The island supports: American white pelican (mean of 6,850 breeding pairs over the last 10 years); California gull (10,000 - 20,000 breeding adults), peregrine falcon (one pair); great blue heron (historic breeding). Currently there is a protective provision for a one-mile buffer surrounding the island to minimize disturbance. AC-3.06

The buffer is limited, however, in that it does not take into account large, permanent structures, such as dikes which may increase the likelihood of disruption to nesting colonial species. The current dikes in Clyman Bay are approximately 5 miles away from the island and the proposed dikes would be approximately 3 miles away. The proximity of newly constructed dikes may provide predators, as well as human trespassers, easier access to Gunnison Island. Pelicans are known to be highly susceptible to any disturbance and will, at times, totally abandon nesting sites. Pelicans completely abandoned Hat Island (in the South Arm of the GSL) in the 1960's due to human disturbance, primarily hunting. Gunnison Island holds the third largest AC-3.07

breeding colony for American white pelicans in North America. The protection of this habitat is essential in the permitting decisions, given the known nesting site. Juvenile pelicans also may confuse the proposed evaporation ponds with potential foraging sites and become weakened and trapped within them until they succumb to the elements. AC-3.07 (continued)

Potential impacts to other wildlife

Snowy plovers, a state sensitive species, are known to use mudflat habitats for nesting, similar to those habitats found along the western shoreline of the GSL. No formal vegetation or wildlife studies have been completed in this area and we request that surveys are conducted to ascertain whether habitats occur in the area and whether or not snowy plovers are present. AC-3.08

Constructing dikes and filling of ponds may eliminate fresh-water springs in the leased area. The precise locations of critical wildlife water sources, if any exist, need to be determined because of the essential role which water sources play in determining potential nesting habitat for snowy plovers. Because insufficient data exists, it is unknown whether the presence of permanent ponds on the western shoreline might impact other wildlife species, such as small mammals and raptors. We recommend surveys be conducted to assess the bird and mammal populations present in Clyman Bay prior to authorization of additional pond construction. AC-3.09

Potential impacts to North Arm salinity, habitat, and ecology

Salinity in the North Arm changed substantially as recently as during the "high water years" of the late 1980's and early 1990's. During this time of rising lake level, GSL ecology and available habitats changed dramatically, highlighting the value of North Arm habitats under conditions of fluctuating water elevations. For example, eared grebes (1-3 million) shifted their staging pattern from the South Arm to the North Arm, commercial brine shrimp harvesters moved to the North Arm to follow the shift in the brine shrimp population from the South Arm to the North Arm, brine fly populations shifted to the North Arm and shorebirds and other wildlife shifted / expanded ranges to the North Arm. AC-3.10

Gunnison Bay is currently open for oil and gas leasing, along with mineral extraction leasing. The potential effects of existing and proposed oil and gas wells, in addition to both existing and proposed mineral leasing by GSLM, should be evaluated to determine how cumulative impacts to wildlife, salinities, and water flow could be expected to influence overall ecology of the North Arm. Also, the removal of salts from the North Arm should be evaluated to forecast potential changes to salinities, brine shrimp, and other wildlife over time and at different lake elevations.

Brine flies are the predominant food item for most migratory shorebirds which visit GSL.

During their life cycle they must anchor to bioherms or stromatolites that form on the lake floor. These calcium carbonate structures appear to be essential to the reproductive life cycle of brine flies and are important to the brine shrimp population. At certain times of the year, brine shrimp sustain themselves by feeding on or near these productive structures. The structures are also essential to what is possibly the largest inland U.S. concentration of wintering common goldeneye. The creation of the causeway increased North Arm salinity that made these bioherms unavailable to brine flies.

AC-3.11

However, when GSL elevation increases and the salinity decreases in the North Arm, these structures are again available for use by brine flies. Bioherms are only found in a few areas of the GSL and they have been found within the area of the proposed lease in Clyman Bay. The EIS should consider whether this area of Clyman Bay, if diked as an evaporation pond, will lose its bioherm structures. The bioherms should be mapped to determine if the dikes could be placed to avoid directly or indirectly impacting the bioherms.

Wildlife concerns associated with Bear River Bay and Willard Spur:

Between 1997 and 2001, and again between 2004 and 2006, the UDWR conducted waterbird surveys throughout the GSL to gain an understanding of where different waterbird species were located and determine which habitats the birds were using during different times of the year and during different water elevations. During each of the 8 years from spring through fall, these surveys were conducted either 17 times a year (1997-2001) or 9 times a year (2004-2006). The data from these waterbird surveys is available for review.

Potential impacts to Canada Goose

The south end of Bear River Bay where the expansion is planned has extensive use by molting Canada geese. For example, in 2000, UDWR observed more than 11,500 geese in Bear River Bay. The *Management Plan for the Rocky Mountain Population of Western Canada geese* by the Pacific Flyway Council recognizes Bear River Bay as one of several major molting areas in the Intermountain West. One of the Plan's objectives is to "maintain seasonal breeding, wintering, and molting distributions."

AC-3.12

Molting areas are typically characterized as large remote areas, with limited disturbance and essentially no predators. Consequently these molting area are sensitive to increased human activity, increased accessibility for predators such as foxes, or actions that would reduce the overall size of the area. Canada geese are also long-lived and become attached to traditional areas they use for breeding, wintering, and molting.

Because of the traditional nature of Canada geese and the rarity of suitable areas for

molting on GSL, UDWR recommends the EIS consider the values of the affected area and whether it is capable of being replaced or compensated for. In general, data indicate that at lake elevations below 4,200 ft, there is a correlation of declining goose numbers (breeding and molting) with declining lake elevation. This may mean that goose use of Bear River Bay may become particularly sensitive to the amount of surface water available during drier cycles, and any conversion of the limited amount of flooded area could affect the numbers of Canada geese which otherwise would be using the area. Please see the attached file on Canada geese in Bear River Bay. AC-3.12 (continued)

Potential impacts to Bear River Bay and Willard Spur salinity, habitat, and ecology

UDWR recommends the EIS consider the potential impacts of this proposed project on water circulation pattens within Bear River Bay and subsequently, vegetation, invertebrate populations, salinity and wildlife. A reduction of surface area (especially during low water years) from diking off portions of the Bear River Bay could affect salinity fluctuations within the bay and may also change water circulation patterns between Willard Spur and Bear River Bay. At a GSL elevation of 4200 feet, the channel connecting the two water bodies may be blocked by dike development. AC-3.13

There is a potential for loss of habitat and habitat fragmentation, thus, affecting resident and migratory waterbird populations. Any salt discharges from the evaporation ponds into the Willard Spur area could dramatically affect habitat for migrating and nesting waterbirds, as well as the vegetation and invertebrate populations that provide a forage base for those birds. For example, sago pondweed is important to many tundra swans during the fall, and alkali bulrush seeds are important to common goldeneye during the winter. UDWR has concerns on the potential indirect impacts to the critical forage of waterfowl. AC-3.14

Due to the remoteness and lack of human disturbance or infrastructure, the entire Bear River Bay and Willard Spur area is used by many other waterbird species. Traditionally, this area has been the center of botulism outbreaks. This may be due to the lack of natural flow currently impeded by the existing dikes. A further decrease in natural flow from this expansion may also increase chances for botulism outbreaks. AC-3.15

Specific wildlife/bird use data from an eight year UDWR Waterbird Survey should be included in this EIS. The UDWR Great Salt Lake Ecosystem Program has been observing the GSL and its wildlife and brine shrimp fishery for over a decade and can provide key information for this EIS. UDWR is available to provide wildlife, habitat, disease and brine shrimp information to the ACOE for this project. AC-3.16

UDWR recommends the EIS give attention to the construction phase of this project.

During the construction of the dikes, there will be a reduced area available for emergent marsh or mudflat depending upon lake elevation, which will likely have impacts on resident and migratory waterbirds. Also, the construction of dikes and filling of ponds may eliminate springs within the leased area that provide habitat and stopover areas for migrating birds and inadvertently provide additional habitat for nesting California gulls, which readily prey upon other nesting birds. Finally, the dike construction may create a channel, thus, reducing the area of open water. We strongly recommend consideration of the potential direct and indirect short-term effects from construction. AC-3.17

Potential impacts to hunting and fishing opportunities

The west Bear River Bay and the Willard Spur areas, in combination, provide extensive values to migratory game birds that use adjacent areas including Bear River Refuge, the private hunting clubs, Harold Crane Wildlife Management Area (WMA) and, to a lesser extent, Ogden Bay WMA, Public Shooting Grounds WMA, and Salt Creek WMA. In years when both west Bear River Bay and the Willard Spur hold water through summer, they provide abundant food as well as rest areas for waterfowl using adjacent areas. The EIS should analyze whether the proposed project may reduce the acreage of fresh water in the bay and affect opportunities for waterfowl hunters in this area and on the above-referenced lands. Reduced forage and foraging area as well as reduced rest area for waterfowl during hunting season can impact opportunities for hunters in these areas as well as the area occupied by the new dikes. A reduction of rest areas or fall habitat for waterfowl may also contribute to premature migration and reduce hunting opportunities. AC-3.18

The Bear River Bay and Willard Spur is an extremely important resource for piscivorous birds including pelicans, cormorants, western grebes, clarks grebes, forsters terns, black terns, Caspian terns, Great blue herons, snowy egrets, and black crowned night herons. These birds exploit this rich resource rather than compete with fisherman at other popular lakes and streams. If this resource is impacted, it may result in thousands of these piscivorous birds moving to hatcheries or lakes and streams and therefore directly impacting anglers and angling revenue. AC-3.19

Brine shrimp populations are easily impacted by salinity fluctuations or an increase in salts/contaminant levels created from the flushing of ponds or changes in water circulation patterns. Discharges of wastewater generated during production and solar evaporation could have a profound influence on brine shrimp populations. Possible outcomes could be introduction or sequestration of nutrients typically released into GSL as well as alteration of the salinity and/or ionic composition of GSL. It is feasible that flushing of the ponds could increase contaminant levels which could then be introduced into the algal and brine shrimp populations. This could potentially lead to modifications in the algal food base utilized by brine shrimp. Brine shrimp survival and reproduction patterns may be altered. The quality and survival of brine shrimp cysts AC-3.20

AC-3.20
(continued)

may change by possible premature deactivation of diapause (hibernation). The cysts available for the initial spring hatch could be decreased thereby directly affecting the brine shrimp population. Decreased cyst quality along with possible contaminant introduction would certainly have impacts on the brine shrimp industry.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Resource Development Coordinating Committee, Public Lands Section, at the above address, or call the Director, Jonathan G. Jemming, at (801) 537-9023, or Carolyn Wright at (801) 537-9230.

Sincerely,

for JH

John Harja
Director

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
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DEC - 5 2007

Ref: Ref: 8EPR-N

Mr. Jason Gipson
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010

RE: Scoping Comments for the Great Salt Lake Minerals Corporation (GSLMC) Solar Evaporation Pond Expansion Project Environmental Impact Statement (EIS)

Dear Mr. Gipson:

The Environmental Protection Agency (EPA) Region 8 has reviewed the United States Army Corps of Engineers' (Corps), *" Intent to Prepare an Environmental Impact Statement (DEIS) for the Great Salt Lake Minerals Corporation's Solar Evaporation Pond Expansion Project Within the Great Salt Lake, Box Elder County, UT"*, Federal Register notice dated November 1, 2007 (Volume 72, Number 211). The notice details that the Sacramento District Corps will be preparing an EIS for the authorization for GSLMC's evaporation ponds expansion into waters of the United States, and action which would require a Clean Water Act (CWA) Section 404 permit and Section 10 of the Rivers and Harbors Act 1899 permit. In accordance with EPA's responsibility and authority under NEPA and Section 309 of the Clean Air Act, we offer the following comments for your consideration as you proceed with the EIS. EPA does not consider this public notice to be the typical 404 permit public notice since the majority of the environmental information necessary for permit evaluation has yet to be developed. As such, EPA reserves its responsibilities under the 1982 Corps/EPA 404(q) Memorandum of Agreement until the publication of the environmental studies in the Draft Environmental Impact Statement.

The notice identifies a proposal by the GSLMC for the construction of approximately 33,000 acres of solar evaporation ponds, impacting 30,713 acres of waters of the United States. This action will occur in two areas within the northern portion of the Great Salt Lake, Utah:

- The first area is located on the western shoreline. The "Dolphin Island Expansion" will expand an existing pond by 18,000 acres and construct a new 7,000-acre pond at the southern end of Clyman Bay. In addition, a new feeder canal and pumping station is being proposed.

- The second area is on the eastern shoreline. An 8,000-acre evaporation pond complex is being proposed in Bear River Bay.

In total, both areas would discharge 1,440,000 cubic yards of fill material into waters of the United States. A majority of this fill material will be used in the construction of the containment dikes surrounding the evaporation ponds.

EPA has reviewed the scoping notice and has attended one of the informational public meetings held on GSLMC's proposal. We have identified the following concerns and issues that should be clearly evaluated in the DEIS:

Purpose and Need Statement

The scoping public notice issued by the Corps has proposed the following purpose and need statement for GSLMC's proposal to meet the National Environmental Quality Policy Act (NEPA) and Section 404 of the CWA, *"The overall project purpose is to expand extraction capacity for potassium at the Great Salt Lake Mineral Corporation's facility."* EPA finds this proposed purpose and need statement to be too narrow in its ability to allow for a full range of alternatives to be evaluated in the DEIS. This conclusion is based on the proposed purpose and need statement restricting GSLMC to only look for obtaining potassium from their facility in the Great Salt Lake. EPA believes that the EIS purpose and need should be broad enough to allow for alternatives that would evaluate other sources of potassium that may have lesser impacts to waters of the U.S. as outlined in Clean Water Act 404 (b)(1) guidelines. Also, it is not clear from the overall project purpose statement why the expanded extraction capacity is needed. It is likely that further evaluation of the reasons for the expansion will lead to the underlying purpose for the project and a clearer, less limiting, statement of project purpose. AC-4.01

Range of Alternatives

The DEIS should present a robust range of alternatives that meets both the needs of NEPA and Section 404 of the Clean Water Act. The Corps should look at alternatives that could avoid impacting waters of the U.S. and look at alternatives that would be the least environmentally damaging practicable alternatives (LEDPA) as required in the CWA 404(b)(1) guidelines. As stated above, the purpose and need statement should allow for this robust range of alternatives. Alternatives that EPA believes should be looked at in the DEIS include: AC-4.02

- Obtaining potassium from other facilities within or outside the Great Salt Lake region.
- Alternatives that would reduce impacts to waters of U.S. (e.g. reduction in the size of the evaporation ponds, reducing the proposed increase in plant production at the GSLMC processing facility, etc.).

Impacts to Waters of the United States:

The proposed action by GSLMC will directly impact approximately 30,714 acres of water of the United States. This acreage is substantial and will require studies to fully determine the

magnitude of the effects on the Great Salt Lake and its surrounding environment. EPA understands that some of these studies are currently underway. EPA would expect that the DEIS include a detailed function and values evaluation of the aquatic resources that are being impacted. In addition, the DEIS should identify potential mitigation opportunities to fully offset aquatic impacts identified in the function values evaluation. AC-4.03

Water Quality

The Corps has identified at their public workshops a number of potential water quality concerns that could occur if the proposed expansion was permitted:

- The DEIS should model the effects of the potential change in salinity concentrations in the South Arm due to the increase in salinity densities in the North Arm. AC-4.04
- The DEIS should evaluate what effects the actions proposed by GSLMC in the North Arm would have on the uptake of selenium, mercury and other heavy metals into the food chain of the Great Salt Lake. AC-4.05

Air Issues

The Draft EIS should analyze the potential impacts to air quality from the construction, full production, and operation of the solar evaporation ponds and the expanded processing plant. This includes analysis of the project's potential effect on all criteria pollutants under the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments, as well as on air quality-related values in any nearby Class I areas. In particular, the DEIS should address the potential air quality impacts associated with particulate matter (PM10 and PM2.5), carbon monoxide, and ozone. Impacts to visibility and the potential for regional haze from the project should also be estimated. Mitigation measures for visual impacts should be identified, such as best available control technology and fugitive dust control measures for roadways. AC-4.06

Depending on the scope of the proposed plant expansion and alternatives, a qualitative emission comparison approach may not be specific enough to adequately address and predict air quality impacts. While a qualitative emission comparison approach provides a means to compare the total predicted emissions of each alternative to a baseline year, it does not provide any indication of the potential for exceedances of ambient air quality standards or the potential for adverse impacts on air quality related values (ie. visibility) in nearby Class I areas. A qualitative emissions comparison approach may not provide the Corps with the information necessary to predict potential air quality impacts and identify appropriate mitigation measures. Air quality modeling may be necessary.

Wildlife Issues

The loss of over 30,000 acres of salt flats and open water in the Great Salt Lake is likely to have an effect on wildlife either using this area directly or depending on those resources or ecological processes that would be lost or changed due to the GSLMC proposal. As stated in the

meeting with the Corps, federal and state wildlife agencies, GSLMC studies will need to be undertaken to characterize the baseline conditions of the area. Within the Clyman Bay area, particular attention will be needed in evaluating the impacts to the snow plover and the white pelican colony on Gunnison Island. Impacts to avian use along the northern shoreline that would be impacted by the expansions of the ponds, the shoreline above GSLMC's proposal and Dolphin Island also needs to be fully evaluated. In Bear River Bay area, a valuable habitat for open water bird use, special attention will be needed to evaluate the effects on bird use by the potential change in the fresh water exchange between Willard Spur and Bear River. The impacts to shrimp productivity and impacts to Canada geese during molting will also need to be addressed.

AC-4.07

AC-4.08

EPA is very interested in assisting the Corps with formulating the project to reduce environmental impacts, where practicable. Please contact Mr. Dick Clark at (303) 312-6748, clark.richard@epa.gov, or me at (303) 312-6004, with any questions you may have concerning these comments.

Sincerely,

Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection
and Remediation

AC-5

United States Department of the Interior

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In Reply Refer To
FWS/R6
ES/UT
ER 07-937
65411-2007-FA-0186

December 17, 2007

Jason Gipson, Project Manager
US Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

RE: Public Notice SPK-2007-00121; Proposed 33,000-acre Expansion of Solar Evaporation Ponds on the Great Salt Lake

Dear Mr. Gipson,

The U.S. Fish and Wildlife Service (Service) has reviewed Public Notice SPK-2007-00121 concerning a proposed 33,000-acre expansion of solar evaporation ponds on the Great Salt Lake (GSL) by Great Salt Lake Minerals Corporation (Corporation). Previously, we provided comments to the Utah Division of Forestry, Fire, and State Lands regarding mineral leases associated with this proposed project and we have participated in the development and review of this proposed project since December 2006 when a pre-application meeting and field trip was held with personnel from the US Army Corps of Engineers (Corps), Utah Division of Wildlife Resources (UDWR), the Corporation and their consultant, BIO-WEST, Inc. During the meetings and field trip we discussed the resource issues and concerns that we believe need to be addressed in the environmental reviews for the proposed project. Based on our earlier comments and our review of the referenced public notice, we provide the following comments for your consideration. Our comments are made pursuant to our authorities under the Endangered Species Act of 1973, as amended, the Migratory Bird Treaty Act, the Clean Water Act, and the Bald and Golden Eagle Protection Act. These comments include potential environmental impacts that should be addressed in an Environmental Impact Statement (EIS) for the proposed project. AC-5.01

We understand that this is a public notice of the Corps' intent to prepare an EIS, rather than a public notice for a 404 permit. As such, the Service reserves its responsibilities under the 1992 404(q) Corps/Department of Interior Memorandum of Agreement until the environmental studies have been completed and the Draft EIS is published.

Project Description

The Corporation currently operates approximately 43,000 acres of evaporative ponds located on the east and west shores of the Great Salt Lake. A 21,000-acre evaporation facility is located on the west shore of the North Arm (Gunnison Bay) of the GSL and a 22,000-acre evaporation facility is located on the east shore of the Bear River Bay. The existing solar evaporation ponds are located within the GSL and are located below 4205 feet above mean sea level, which is below the high water mark of the GSL. These facilities allow the Corporation to extract about one-half of the potassium needed in their production of potassium sulfate. The company draws naturally occurring brine from the lake into shallow ponds and allows solar evaporation to produce sulfate of potash, as well as salt and magnesium chloride minerals. Sulfate of potash is a specialty fertilizer that improves the yield and quality of high-value crops such as fruits, vegetables, tea, tree nuts and turf grasses. The facility has operated on the lake for 40 years. At present, the remaining half of the potassium is imported from other sources. The proposed expansion of the solar ponds will reduce or discontinue the Corporation's reliance on imported potassium.

The applicant is proposing to construct three additional solar evaporation ponds totaling approximately 33,000 acres. The proposed project includes an 8,000-acre pond on the east side of the Great Salt Lake in the Bear River Bay. Brine would be pumped to and from the new pond with existing pump stations; however, the capacity of these pump stations would be increased proportional to the new pond acreage. Additional feed brine for this new pond would come from the North Arm of the GSL, flowing through existing east side ponds. In addition, on the west side of the lake, two new solar ponds would be added to the existing west side complex, an 18,000-acre Dolphin Island expansion pond and a 7,000-acre pond at the southern end of Clyman Bay between the Union Pacific Railway and several existing ponds. A new feed canal into the lake and a new pump station would be constructed on the north end of the proposed Dolphin Island pond. Diesel driven pumps, similar to those currently in use, would pump brine from the new feed canal to the new pond. Existing pumps would be used to pump brine from the new pond to an existing pond. The total 25,000-acre pond expansion on the west side would increase the concentration of brine transferred to an existing gravity-flow trench for transport to the east ponds in the Bear River Bay. Dikes would be built to accommodate the pond expansion and impound the waters of the respective areas. On the east side of the lake approximately 540,000 cubic yards of fill would be discharged into Bear River Bay to create the dikes. On the west side of the lake, dike construction would require approximately 900,000 cubic yards of fill to be discharged into open water in the vicinity of Clyman Bay.

Purpose and Need Statement

The project purpose and need statement in the referenced public notice is narrowly defined and should be rewritten to more accurately reflect the Corporations' desire to acquire supplemental sources of potassium for the production of fertilizer. The existing statement, "expand extraction capability for potassium at the Great Salt Lake Mineral Corporation's facilities" limits the possible alternatives to only extraction from the GSL and outright eliminates alternatives such as AC-5.02

importing potassium from existing or new sources. A broader purpose and need statement for the EIS would allow a larger suite of alternatives to be considered and would still meet the Corporation's needs. AC-5.02 (Continued)

Water Quality

During preliminary project meeting discussions, the Corporation agreed to conduct limited water quality sampling to obtain selenium and mercury concentrations in their current discharges to Bear River Bay. Mercury and selenium, which are two elements of concern for the GSL, bioaccumulate in living organisms at much higher concentrations than measured in water, and results from recent scientific studies suggest elevated concentrations of mercury are present in the GSL and may be taken up by waterfowl and other birds. Also, the State of Utah is developing a numeric water quality standard for selenium for the GSL. The concern with the flushing of brines from the Corporation's solar ponds is that mercury and selenium may be concentrated in the remaining brines and flushed back to Bear River Bay and GSL in a plume. Due to their interactions in the environment, these elements are readily incorporated and efficiently recycled in the food web so even a short-term pulse will have lasting affects. We appreciate the Corporation's efforts to collect and analyze water for selenium and mercury and we have reviewed the data presented in the Water Quality Monitoring Report for GSL Minerals (four page report from BIO-WEST, Inc.). Based on the available data collected by BIO-WEST, Inc, selenium concentrations in water were below the freshwater water quality standard of 5 parts per billion; however, the detection limit for mercury (0.2 ppb) was sixteen times higher than the freshwater water quality standard of 0.012 ppb. In addition, water samples were collected near the end of the flushing process, which may yield different results than if collected near the beginning of the flushing process. Recent data (unpublished) from the Service and the Utah Division of Water Quality show significant accumulations of both selenium and mercury in waterbirds which forage on the GSL. Based on our concerns regarding selenium and mercury in waterfowl and other waterbirds using the GSL, we recommend the EIS evaluate the potential accumulation and release of selenium and mercury from the solar evaporation ponds and the impact such a release would have on wildlife. In addition we recommend: 1) lowering the detection limit for mercury to the freshwater water quality standard of 0.012 ppb; 2) collecting samples within the first few days of flushing rather than the last few days; and 3) sampling effluent from ponds in Gunnison Bay if they are flushed. AC-5.03

More salts are removed annually from the GSL than are added by inflows and natural processes. Furthermore, some salts are harvested disproportionately to their concentration in the lake and to their ability to be replenished, including potassium. We recommend the long-term effects of this proposed project, in conjunction with existing mineral operations throughout the lake (i.e., cumulative effects), be evaluated to assess the impact on salt concentrations and proportions of minerals in the lake and how changes in these might affect the lake and its biotic community (e.g., algae, brine shrimp, brine flies, and birds). AC-5.04

As we understand the proposed project, flushing of the northern-most expanded solar evaporation ponds in Bear River Bay would occur directly into Bear River Bay near the Willard Spur. This would likely increase the salinity within the Bay and may adversely affect macrophytes, invertebrates and fish, and indirectly affect waterfowl and piscivorous birds by decreasing food availability. During most years, large numbers of migratory birds, including green-winged teal and Canada geese use Bear River Bay on an annual basis. The Bay also provides valuable habitat during certain years for other bird species such as eared grebe and western grebe (Don Paul, personal communication). We recommend the EIS evaluate the impacts of adding these brines to the water quality and wildlife using Bear River. The analysis should evaluate a range of scenarios with an emphasis on average and less than average runoff years and also evaluate the effects during multiple successive years of drought. AC-5.05

Migratory Birds

The GSL is unique in the Intermountain West in its geographic location, large size and its diversity of habitats for migratory birds. This combination of factors makes the GSL an essential resource for migratory birds such as waterfowl, shorebirds and other waterbirds. Due to its value for shorebirds the GSL was recognized as a site of hemispheric importance and included in the Western Hemispheric Shorebird Reserve Network. The following information on bird use of habitats on GSL should be considered in the EIS.

- Bear River Bay is just one of several Bays on the GSL that hosts hundreds of thousands of breeding, feeding, migrating and staging migratory birds every year. Bear River Bay is considered crucial to bird conservation at the western hemisphere level as recognized by the Western Hemisphere Shorebird Reserve Network. The area is also recognized as an Important Bird Area in North America by the National Audubon Society. These special designations are assigned only after extensive and rigorous documentation and review by conservation professionals. In addition, the role of the GSL, and lands within Bear River Bay in particular, figured prominently in devising conservation plans and associated actions for several species and species groups such as the Intermountain West Waterbird Conservation Plan (Ivey and Herziger, 2006) and the Marbled Godwit Conservation Plan (Melcher et al., 2006). AC-5.06

- The saline waters and freshwater marshes of the GSL comprise one of the most critical breeding and staging sites for colonial waterbirds, waterfowl and shorebirds in the Intermountain West (IMW). Oring et al. (2000) stated "the Great Salt lake stands out as probably the most important inland shorebird site in North America." Shuford et al. (2002) found that in the fall, 78% of the IMW region's black necked-stilt and American avocet, 77% of willet, 62% of whimbrel, 87% of long-billed curlew, 86% of the marbled godwits, and 39% of the dowitchers were concentrated at the GSL. Shuford's study also found that the GSL was the most important location for northbound migrant shorebirds in the spring. Paul and Manning (2002), in their investigation of shorebird distribution

AC-5.06 (Continued)

across the GSL, found that across years and seasons, those same shorebird species listed above, were consistently concentrated in the largest numbers in Bear River Bay.

- Bear River Migratory Bird Refuge is also located in Bear River Bay. The 74,000 acres of the Refuge are lands specifically set aside for wildlife conservation. The Refuge hosts 1% of the continental breeding population of American avocet, 2% of the continental breeding population of black-necked stilt, the largest breeding colony of white-faced ibis in the world (about 18,000), 30% of the western population of tundra swans, 25% of the continental population of marbled godwit during migration, 3% of the continental population of long-billed dowitcher during migration and 2% of the continental breeding population of Franklin's gull. Each of these species is considered a priority for conservation at the continental, regional, and refuge level due to declining populations or having breeding and migration habitat restricted to the IMW. These species may also spend considerable time utilizing habitats outside the Refuge boundary in Bear River Bay, especially Willard Spur.

- The GSL acts as the largest inland staging area for marbled godwit in North America (Melcher et al., 2006). Paul and Manning (2002) found that greater than 90% of the marbled godwit using the GSL were concentrated in Bear River Bay. The peak count of godwits from Bear River Bay of 43,000 in 2000 is the equivalent of 25% of the global population.

AC-5.07

The EIS should evaluate the proposed expansion's cumulative impact on marbled godwit populations, including the impacts of further reduction of the remaining habitat in Utah and the influence of food availability, disease outbreaks, and predation. There is evidence that marbled godwit habitat has been reduced over the last 60 years. Woodbury et al. (1949) indicated marbled godwit were "especially numerous around Great Salt and Utah lakes." In recent times, however, fewer than 20 godwits can be found on Utah Lake which is likely due to loss of habitat caused by changes to the natural hydrology (Bridget Olson, personal communication). Concentrating populations of marbled godwit and other species into fewer areas raises the risk of extinction due to catastrophic events such as disease outbreaks, unusual weather and predation. In addition to the habitats lost and/or modified from the existing facilities associated with the project, cumulative habitat losses also include Willard Reservoir and upstream diversions of water from the Bear River resulting in desiccation of wetlands in Bear River Bay.

AC-5.08

Changing water regimes in Bear River Bay should also be considered in the EIS. Marbled godwits equipped with satellite and radio transmitters in 2005-2007 spent up to 70% of their time at GSL just south of the Bear River Refuge border in the shallow waters of Willard Spur (Bridget Olson, personal communication). Currently, waters from this area meander to the southwest and then parallel the current western-most dike of the Corporation. The proposed 8,000-acre expansion would interrupt this watercourse thereby disrupting the hydrologic regime. The installation of a new series of dikes, as proposed, would cut-off this out-flow area which might

increase water depths in the north-east portion of Willard Spur as well as the un-impounded portions of Bear River Refuge. The increased water depths may render the area too deep for feeding shorebirds and waterfowl, including marbled godwits. AC-5.08 (Continued)

The impact of changing water quality on migratory birds and their habitat should also be considered in the EIS. The release of waters from the ponds where minerals have concentrated would modify the water quality, and concentrated minerals would impact water and soil chemistry. Soil and water chemistry influence the diversity, abundance and structure of aquatic invertebrate and vegetative communities. Changes to invertebrate and vegetation communities could lead to a decrease in food availability for migratory birds. Loss of habitat associated with the loss of available foods can lead to cumulative impacts to migratory bird populations through a decrease in body condition and poor reproductive success. Many of the waterfowl and shorebirds that stop at Bear River Bay are re-fueling for migration and increasing body fat which they carry to their breeding grounds. The amount of body fat directly affects reproductive success. AC-5.09

The impact of predation on migratory bird populations is another issue that should be addressed in the EIS relative to the proposed expansion. Declines in many waterfowl populations and shorebirds may be largely explained by habitat loss with predation being an exacerbating factor (Ball et al. 1995, Cote and Sutherland 1997 *in* Frey 2004, Cavitt 2006). Waterfowl nesting success surveys conducted from 1999-2006 on Bear River Refuge indicated predation rates exceeded success rates needed for regional population sustainability. In order to raise waterfowl and shorebird nesting success rates, the Refuge implemented predator control in 2001. Since that time, nesting success rates have gradually increased to levels needed for population expansion. The configuration of the Refuge with a series of dikes to impound water provides an extensive system of corridors for potential travel and foraging for red foxes, raccoons, and striped skunks. Therefore, predator control is an essential tool and is needed on an annual basis as predators from nearby cities continue to move into Refuge habitats in search of food and space. These predators tend to stay within a specified distance of a dike or levee (about ¼ mile) and rarely move out into open waters found on the southern boundary of the Refuge and Willard Spur. Migratory birds roosting, foraging and nesting in open waters in these areas are at lower risk of predation. With the proposed expansion of the Corporation's facilities and the series of levees, the number of predators and predator travel and foraging corridors will be increased. The proposed levee system will also provide mammalian predators access to known migratory bird foraging, roosting and nesting sites along the southern edge of the Refuge that are now nearly free of predators. AC-5.10

Site specific data for avian usage of Gunnison Bay is quite limited when compared to data for Bear River Bay and other areas around the lake; however, the limited information that does exist indicates that Clyman Bay and the western shore of Gunnison Bay have the potential to provide foraging and nesting habitat for shorebirds including the snowy plover and the American avocet. AC-5.11

In addition, Gunnison Island is one of the premier breeding colonies for American white pelican in North America. Because of this, in 1977 the Utah State Legislature passed the Pelican

AC-5.11 (Continued)

Management Act which directs the protection and management of GSL pelican populations and provides for the protection of Gunnison Island specifically for pelicans. This colony is the only one in Utah and is the largest American white pelican colony west of the Continental Divide (King & Anderson, 2005). Recent colony failures at Chase Lake National Wildlife Refuge due to disturbance from predators and the fact that young pelicans are susceptible to West Nile Virus make the colony at GSL vitally important for this species. Due to its location, predator access to Gunnison Island is rare and mosquitoes with West Nile Virus are less likely to arrive at the island. Other birds such as peregrine falcon also nest on the Bay's islands (Dolphin, Cub, and Gunnison). The EIS should evaluate impacts to the breeding colony of pelicans on Gunnison Island and to other shorebirds along the shoreline and at springs and wetlands within Clyman and Gunnison bays. Furthermore, if lake levels rise like they did in the mid-1980's, the south arm of the GSL may become too fresh to support large populations of brine shrimp; subsequently, salinities in the north arm may decrease to levels that would support large numbers of brine shrimp which would then attract large numbers of birds as happened in the 1980's (Don Paul, personal communication). The analysis of the expansion of evaporation ponds in Clyman and Gunnison bays should evaluate how migratory birds would be affected under this high-water scenario. AC-5.12

Bear River Bay is highly important to waterfowl. The area is used by Canada geese for molting with more than 10,000 counted during some years in the late 1990's (Tom Aldrich, personal communication). The Bay provides aquatic habitat for a fishery similar to that of the Bear River and thus provides forage for several species of picivorous birds. The area is also important foraging and resting habitat for other waterfowl due to the fresh water, aquatic macrophytes, and other aquatic biota that exist in the Bay (Don Paul, personal communication). For example, up to 126,000 green-winged teal were counted in Bear River Bay during 2007. The EIS should evaluate the biotic and abiotic features that attract birds to the Bay, evaluate the direct and indirect impacts to the avian populations of losing 8,000 acres of habitat in the Bay, and evaluate if the losses can be avoided or mitigated elsewhere. The analysis should consider the changes in habitats, both temporally and spatially. The analysis should evaluate the proposed project's effects to all migratory bird species, including those listed above. The analysis should provide a plan for long term monitoring of avian resources relative to potential project impacts as well as a mitigation plan for potential project impacts to migratory birds. For example, it should evaluate noise and visual effects from project activities, habitat reduction and fragmentation, and whether habitat enhancement efforts may minimize displacement impacts for some species. Habitat impacts for species on the Service's 2002 list of Birds of Conservation Concern (BCC) and Partners in Flight Priority Species should be evaluated as part of the analysis. The BCC List identifies those migratory and non-migratory avian species that, without additional conservation actions, are likely to become candidates for listing under the ESA. To help meet responsibilities under Executive Order 13186, lease stipulation should include provisions which: recommend ground-disturbing activities occur outside critical breeding seasons for migratory birds; minimize temporary and long-term habitat losses; and require mitigation for unavoidable habitat losses, particularly at the field development stage. Mitigation should include the option for offsite, in-kind habitat compensation. AC-5.13 AC-5.14

Habitat Fragmentation and Disturbance

The analysis should identify the amount, location, and timeframe of temporary disturbance as well as permanent facilities that could result from the proposed action. Displacement of wildlife across a large area during critical times, such as breeding, could prove a significant impact. If wildlife are displaced, it is likely that the area to which they move is inhabited by other wildlife or disturbed by other ongoing activities. Depending on the season and species, displacement could lead to nest abandonment, inter- and intra-specific competition, reproductive failure, and possible mortality, including an increase in disease susceptibility. Nesting American white	AC-5.15
pelicans are known to be highly susceptible to human related disturbance. In addition, the	
cumulative effects of other projects in the area may limit the availability of alternative sites for displaced wildlife. On-going maintenance of dikes and other facilities may increase the disturbance and/or destruction of nests of species such as killdeer.	AC-5.16

Aquatic Habitat

Because the Great Salt Lake and the Bear River Bay inflow area contain significant wetlands and littoral and riparian areas, we recommend alternatives be developed to avoid any wetland losses in accordance with Section 404 of the Clean Water Act, Executive Order 11990 (wetland protection) and Executive Order 11988 (floodplain management) as well as the goal of "no net loss of wetlands." Riparian and littoral areas are some of the most productive wildlife habitat types in North America. Riparian and littoral vegetation plays an important role in protecting streams and lakes, reducing erosion and sedimentation as well as improving water quality, maintaining the water table, controlling flooding, and providing shade and cover. In view of their importance and relative scarcity, impacts to riparian and littoral areas should be avoided. Unavoidable impacts should be fully mitigated.	AC-5.17

Cumulative Impacts

The combined, incremental effects of human activity, referred to as cumulative impacts, have the potential to pose a serious threat to the GSL environment. While they may be insignificant individually, cumulative impacts accumulate over time and space, from one or more sources, and can result in the degradation of important resources. Because of this, cumulative impacts analysis should be addressed in the EIS. The cumulative impacts discussion should, at a minimum, include evaluations within the region of influence of the proposal for: potential for additional fish and wildlife impacts due to energy development including oil and gas in the GSL; impacts from increased habitat fragmentation; displacement of wildlife; and cumulative effects of lake level changes on project affected resources. In addition, the EIS could include an analysis of the alternatives' carbon footprint and impact on global climate change.	AC-5.18

We appreciate the opportunity to provide these comments. As this project progresses, the Service would appreciate information on upcoming field visits and interagency coordination. If

you need further assistance, please contact Nathan Darnall, Ecologist and Migratory Birds Coordinator, at the letterhead address or (801) 975-3330 ext. 137.

Sincerely,

Larry Crist
Utah Field Supervisor

cc: Dave Grierson
Sovereign Lands Coordinator
Division of Forestry, Fire & State Lands
1594 West North Temple, Suite 3520
Salt Lake City, Utah 84116-3154

UDWR – Northern Region (Attn: Pam Kramer)
EPA – Denver (Attn: Dick Clark, Dave Ruiter)
FWS - Bear River MBR (Attn: Bob Barrett)

LITERATURE CITED

Cavitt, J. (2006). Breeding productivity of shorebirds at Bear River Migratory Bird Refuge, Utah 2005-2006. Unpublished report. Weber State University, Ogden, UT.

Frey, S. Nicole. (2004). Habitat use and movements of predators on a managed waterfowl Refuge. Utah State University, Logan, UT PhD dissertation.

Ivey, G., and C. Herziger. (2006). Intermountain West Waterbird Conservation Plan, Version 1.2. A plan associated with the Waterbird Conservation for the Americas Initiative. Published by U.S. Fish and Wildlife Service Pacific Region, Portland, OR.

King, D. T., & Anderson, D. W. (2005). Recent population status of the American white pelican: a continental perspective. Waterbirds , 28 (Special Publication 1): 48-54.

Melcher, C., A. Farmer, and G. Fernandez. (2006). Conservation Plan for the Marbled Godwit Version 1.1. Manomet Center for Conservation Sciences, Manomet, MA.

Oring, L.W., L. Neel, and K.E. Oring. (2000). Intermountain West Regional Shorebird Plan, U.S. Shorebird Conservation Plan, V. 1.0. Manomet Center for Conservation Sciences, Manomet, MA.

Paul, D.S. and A. E. Manning. (2002, *in press*). Great Salt Lake Waterbird Survey five-year report (1997-2001). Great Salt Lake Ecosystem Project, Utah Division of Wildlife Resources, Salt Lake City, UT.

Shuford, W.D., G.W. Page, and L.E. Stenzel. (2002). Patterns of distribution and abundance of migratory shorebirds in the Intermountain West of the United States. Western Birds 33:134-174.

Woodbury, A.M., and C. Cottam, J. Sugden. (1949). Annotated check-list of the birds of Utah. University of Utah, Bulletin Vol. 39, No. 16. University of Utah, Salt Lake City.

AC-6

Jennifer.....

Thank you for your timely response. As part of the analysis we will include an evaluation of compliance with the GSL CMP and MLP. We will add the issue to our final list.

Blaise.

At 03:52 PM 6/12/2008, Jennifer Wiglama wrote:

Blaise,
The Division of Forestry, Fire and State Lands has reviewed the Great Salt Lake Minerals EIS, Scoping Issue Relevance. We would just like to add one more issue to the list but it's an easy one.

Do the proposed alternatives that affect lands below the meander line follow the Great Salt Lake Comprehensive Management Plan and the Great Salt Lake Mineral Leasing Plan? AC-6.01

This is more of a policy issue that we feel should be mentioned in the EIS.

Thanks
Jennifer

Jennifer Wiglama
Mineral Lease Analyst
Utah Forestry, Fire and State Lands
PO Box 145703
Salt Lake City, UT 84114-5703
801-538-5495 (ph.) 801-533-4111 (fax)

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1063 West 1400 North
Logan, UT 84321

Telephone: (435) 752-4202
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APPENDIX D

PUBLIC COMMENTS DURING FIRST SCOPING PERIOD

U.S. ARMY CORPS OF ENGINEERS

PUBLIC INFORMATION MEETING ON THE PROPOSED 33,000-ACRE EXPANSION OF SOLAR EVAPORATION PONDS ON THE GREAT SALT LAKE	)	TRANSCRIPT OF PUBLIC COMMENTS

November 7, 2007 * 5:00 p.m.

Location: South Davis Junior High
298 West 2600 South
Bountiful, Utah 84010

Reporter: Kelly Fine-Jensen, RPR
Notary Public in and for the State of Utah

A P P E A R A N C E S

PUBLIC SPEAKER:

R. Jefre Hicks
6680 South 475 East
South Weber, Utah 84405

P-1

-oOo-

P R O C E E D I N G S

(Time noted: 7:38 p.m.)

MR. R. JEFRE HICKS: My name is R. Jefre Hicks. I'm from the Utah Air Boat Association. Actually, I am President of the Association.

I am mostly concerned about the Bear River Bay. And my concerns are that there are very, very few areas on the Great Salt Lake that are considered freshwater bays. Bear River Bay, Willard Spur and Farmington Bay are really the only bays on the lake that have freshwater. If they take out a huge junk of this bay, how would you ever replace that? How can you ever replace a freshwater bay on a salt water lake without a huge influx of water, like Bear River, which supplies Bear River Bay or Jordan River, which supplies Farmington Bay. I'm very concerned and very worried. P-1.01

I also want to mention that Bear River Bay now, while it's dry, in a drought, looks like a barren desert. And if you go out there right now, it's covered under about two inches of water. And a month ago it was dry as a bone. If you look at it now, there is really nothing to see. But in my years, many years, probably in the last 20 years of P-1.02

P-1.02 (Continued)

being out there hunting and recreating, I found that after a drought, like two years of water on it, it grows up with Salicornia and other vegetation. Salicornia is an incredible plant for ducks and geese, which is what I'm concerned about.

P-1.03

So I am afraid that by looking at this in a microsecond, like a snapshot in time, they won't get the full impact of what is really out there. There are literally thousands and thousands of water fowl, ducks and geese that use that area. Not so much now, during a drought year, but give this water two years and it turns into a mat of grass, of flooded water with grass. Just a big duck buffet.

P-1.04

It's really important to me, as a hunter and as a bird watcher -- and I love to watch these things -- that they not disappear without replacing it. And if they replace it in an area that is inaccessible, the recreation opportunity is gone. I don't know how they would replace it. But if they're gone, it's gone. I'll never get to see it again. No one -- and my children will never see it. It's gone. And to take 20 percent and dike it off to get potash seems excessive.

I also want to say I understand that they want and need to make a living and they want -- and

they have a right to make a living, but I hate to see them take public land that is so valuable and irreplaceable and do that.

The end.

(Time noted: 7:42 p.m.)

(Public meeting concluded at 9:00 p.m.)

REPORTER'S HEARING CERTIFICATE

STATE OF UTAH)
: ss.
COUNTY OF SALT LAKE)

I, Kelly Fine-Jensen, Registered Professional Reporter and Notary Public in and for the State of Utah, do hereby certify:

That said proceeding was taken down by me in stenotype on November 7, 2007, at the place therein named, and was thereafter transcribed, and that a true and correct transcription of said testimony is set forth in the preceding pages;

I further certify that I am not kin or otherwise associated with any of the parties to said cause of action and that I am not interested in the outcome thereof.

WITNESS MY HAND AND OFFICIAL SEAL this 16th day of November, 2007.

_____
Kelly Fine-Jensen, RPR
Notary Public
Residing in Salt Lake County

P-2

7 November 2007

To: Army Corps of Engineers

From: Bridgerland Audubon Society

Subject: ACE EIS of Great Salt Lake Mineral Company Proposed Expansion

To whom it may concern:

On behalf of the Bridgerland Audubon Society, I am providing copies to you of the 2002 Utah Partners in Flight overview of the American White Pelican's status in Utah. Please note the attention paid to Gunnison Island, one of three major nesting sites for this species in North America.

We formally request that your assessment of the proposed GSLM expansion and related documents include a *detailed* summary and reaction to the UPIF entry concerning the American White Pelican. In particular, we ask that you *explicitly analyze whether the proposal GSLM expansion will enhance, assist or harm the American White Pelican's status on Gunnison Island. This is a crucial biological concern.* P-2.01

More generally, we formally request that your assessment discuss *specific ecological impacts* of the proposed permit and project relative to the avian ecology in that area of the Great Salt Lake. P-2.02

Finally, we will expect to find that your assessment also includes information regarding the *economic impact* of birding at the Great Salt Lake and whether and how the proposed permit and project will enhance, assist or harm the economic consequences of birding there. P-2.03

I request that I be informed of all document publications related to this proposed permit and project and that I receive a copy of your assessment.

Thank you.

Christopher Cokinos
author of Hope Is the Thing with Feathers: A Personal Chronicle of Vanished Birds
4950 Hollow Road
Nibley, UT 84321
chris.cokinos@usu.edu
435-245-7769 home

UTAH PARTNERS IN FLIGHT
AVIAN CONSERVATION STRATEGY
VERSION 2.0

UTAH PARTNERS
IN FLIGHT

EDITORS
JIMMIE R. PARRISH, UTAH PARTNERS IN FLIGHT PROGRAM COORDINATOR
FRANK HOWE, NONGAME AVIAN PROGRAM COORDINATOR
RUSSELL NORVELL, NONGAME AVIAN ECOLOGIST

UDWR PUBLICATION NUMBER 02-27
DECEMBER 2002

UTAH PARTNERS IN FLIGHT PRINCIPLES

PRINCIPLE 1. Protection of bird populations and their habitats is mandated within the framework of sound natural resource principles and existing state and federal directives, management goals, and objectives.

PRINCIPLE 2. Sustaining bird populations and their habitats requires long-term planning and the close cooperation and coordination of management activities by state and federal agencies, private interests, and the general public.

PRINCIPLE 3. The maintenance of abundant bird populations in Utah is dependent on the protection, restoration, and management of habitats. Persistent degradation and loss of important bird habitats should be reversed.

PRINCIPLE 4. Priority Utah bird species and their habitats should be identified and their conservation needs established for breeding, migration, and over-wintering requirements.

PRINCIPLE 5. Partnerships consisting of state and federal agencies, private organizations, and the general public are considered the best approach to identifying high priority bird populations and their important habitats. The conservation needs of these species and their habitats can only be addressed through a pooling of resources, expertise, and funding to effect viable, consistent, common sense, and long-term management recommendations.

PRINCIPLE 6. Healthy bird populations and their habitats reflect a positive quality of life for humanity and contribute to economic, recreational, scientific, educational, and aesthetic values for society.

AMERICAN WHITE PELICAN
(*Pelecanus erythrorhynchos*)

Conservation Priority Score of 36

Jim Weis

ASSOCIATED SPECIES: Other bird species that may respond similarly to habitat components used by American White Pelicans are California Gull, Caspian Tern, and Double-crested Cormorant for nesting habitat. Other species besides the ones listed for nesting habitat that forage for food in similar habitat are Western and Clark's Grebes, Forster's Tern, Great Blue Heron, Black-crowned Night Heron, Snowy and Cattle Egrets.

DISTRIBUTION: In Utah, the only known breeding colonies are located in the northern portions of the state specifically within the Utah Lake/Great Salt Lake ecological complex. There is a record of pelicans nesting on Rock Island, Utah Lake in 1904 (Goodwin 1904) and two records of pelicans nesting in greasewood hummocks southwest of Farmington Bay WMA in 1973 and 1974 (C. Jensen, pers. comm.). Historically pelicans were identified as nesting on Egg Island in 1850 by Howard Stansbury and perhaps on Badger Island in the 1880's (Dr. H. A. Whytock). Beyond these records the substantial nesting has taken place on Hat Island and Gunnison Island. Pelicans have not nested on Hat Island for several decades. Gunnison Island persists as the only colonial nesting site for American White Pelicans in Utah and currently ranks as one of the largest breeding colonies in North America. During spring migration, breeding season and fall staging and migration periods American White Pelicans can be observed at many reservoirs throughout the state.

ECOLOGY: American White Pelicans migrate from northern breeding areas but are year round residents in Texas (Chapman 1988) and Mexico. Populations breeding west of the Rocky Mountains move southwest into California and due south to the west coast and central states of Mexico (Behle 1958). Spring returning occurs in late February in Nevada and early March in Utah (Behle 1959, Alcorn 1943). Further north in Yellowstone and Canada birds arrive in April and May (Diem 1967).

Autumnal departure seems to be drawn out from October through December. In Utah at least three factors seem to play a role when birds depart, the opening of the fall waterfowl hunting season, availability of fisheries, and ice up. Behle recorded banded birds from the Great Salt Lake being recovered north in Idaho (1958). Recent satellite telemetry studies of pelicans radio tagged at Pyramid Lake, Nevada also suggest that some birds fly north after the breeding season to the intermountain area. One bird made a flight from Pyramid Lake to Bear River Bay, Utah in the course of a day (Fuller et al. 1998).

The breeding range extends from the park lands and prairies of Canada into the mountain states to the

Gulf Coast of Texas and Mexico. Preferred nesting habitats are islands especially associated with fresh water lakes. Preferred foraging areas are shallow lakes, marshlands and rivers. Breeding colonies are often 50+ km from foraging areas. Low site fidelity and high mobility appear to be adaptations American White Pelicans have made to take advantage of temporarily rich food supplies (Evans 1972, Knopf 1976).

Primary food is fish. Fish are often sought in water < 2.5 m deep (Anderson 1991). American White Pelicans are diurnal and nocturnal foragers. Capture rates are higher during day and at the leading edge of foraging flocks, than at night (McMahon and Evans 1992a). Cooperative foraging is often employed in shallow water. Several to hundreds of pelicans can be observed not only to cooperate but also coordinate strategies to capture fish. They drive fish to shallows and often encircle and concentrate prey, then dip bill into water and scoop fish into their gular pouch (for details see Anderson 1991, McMahon and Evans 1992b). They forage mainly on "rough" fish often small, less than one-half bill length.

American White Pelicans are highly social. Nesting in colonies, using cooperative flight and foraging strategies, pelicans are among the most gregarious of avian species. These birds are often observed sleeping, roosting and sun bathing together. They are monogamous. Pair formation occurs after arrival in Utah the last week in March (Knopf 1979). Nest building occurs <5 days. There is synchrony in nest chronology within such colonies. For the colony as a whole, nest initiation extends over 3 months in Utah (Knopf 1979). A two egg clutch is produced within a week of nest completion with an incubation period of 30 days. Nestling attendance by a parent occurs to 3 weeks of age, after which young congregate into pods of young or creches that often are mobile. Young from various sub-colonies often combine to form larger pods.

Colonial nest sites are usually islands with flat or low gradient slopes so adults can access nest by flying in. Gravel or sandy, unconsolidated substrates are preferred for nesting. Breeding begins at three years of age. Fledging rates vary with type of cover near nest, range is from 0.89 to 0.34 young fledged/nest. Fledging success decreases as nesting dates become later (one chick/nest in early April to about 0.4/nest for eggs laid in June, Utah; Knopf 1979). Maximum reported lifespan is 26.4 years (Clapp et al. 1982). There is significant mortality of second eggs or second young. In Utah both young fledged at 9.7% and 9.4% of 195 and 374 nests (Knopf 1979).

Predation is rarely a problem for adults and young at undisturbed colonies. California Gulls are the main source of predation in Utah colonies, especially during episodic disturbance and where older chicks force younger nestlings out of the nest. Humans, including researchers, can increase vulnerability of eggs and nestling gull predation by bumping adult pelicans off nests.

Pelicans can be host to parasites, especially biting lice (*Piagetiella peralis*, mallopoya) (Price 1970), nematodes (*Contracaecum spiculigerum*), tapeworms (*Hymenolepis* spp., *Dibothrium cordiceps, Oilgorchis longivaginatus*), and subcutaneous mites (*Pelecanectes apunctatus*) but there is no evidence of mortality to these parasites. In 1997 there was an outbreak of New Castel's disease in Utah Double-crested Cormorants at the Bear River refuge, Utah but no known case of mortality for allied pelicans in the area.

In Utah the only known persisting long term nesting colony is on Gunnison Island. It lies in the north arm of the Great Salt Lake approximately ten miles to the northeast from Strong's Knob, nine miles from the railroad causeway and 25 miles east from Promontory Point. Gunnison Island, named for John Gunnison of the Harvard Stansbury expedition of 1849 and 50 is located in township 9 west, range 7 north of box Elder County, Utah (Rawley 1976). Its long axis extends north and south. It occupies approximately 66 ha (163 ac) and has a relief of 233 ft (85 m) which forms a rock backbone that adds considerable relief and topographic variation including bays, slopes and sandy beaches. American White Pelicans and California Gulls are the primary colonist nesting species on Gunnison Island where over time they have nested mainly on the east and west sides of the island.

Non-breeding and early spring and late summer/early fall breeding age American White Pelicans are widely dispersed through Utah in small mobile numbers especially in the Great Basin. Utah has excellent

information on post-nesting season dispersal of American White Pelicans thanks to two primary researchers in the 1940's and 50's. Dr. Jessop Low and Dr. William H. Behle banded 1,502 young pelicans at Gunnison Island over time. Up to 1958, as many as 82 returns provided a picture of pelican distribution. The principle wintering grounds are scattered throughout Mexico, but a few returns are from California (Behle 1958). The returns, as mentioned elsewhere in this report, reflect a northward movement for many birds that precedes the southward migration to winter habitats. Behle reported two instances of natal site fidelity for Gunnison Island (1958).

The Gunnison Island breeding population is somewhat unique in that the lake surrounding the nest colony is hyper saline and does not support a fishery, therefore, adults must make flights of at least 30 miles, one way, to fisheries. These fisheries have evolved over time from pre-Anglo native fisheries to post-Anglo non-indigenous fisheries dominated by carp (*Cyrinus carpio*) prior to the mid 1980's and now supplemented by Gizzard Shad (*Dorosoma cepedianam*) especially in the Willard Spur arm of Bear River Bay. Traditional foraging areas for Gunnison Island adults have occurred to the east of the colony at Bear River Bay including the National Refuge and east and southeast at state waterfowl management areas (WMA) and privately managed Wetlands. During these high lake years (1983-1987) primary foraging sites were restricted to fisheries occurring east of traditional lakeside sites. Some sites of foraging importance, directly south of Willard Reservoir, Rainbow and George East Clubs, the east portions of Ogden Bay WMA, Farmington Bay WMA and the Associated Duck Clubs were flooded during this time. Pelicans also flew to foraging areas north and south of Gunnison Island to American Falls Reservoir in southern Idaho and south to Utah Lake. Some birds flew east as far as Dingel Marsh on the north end of Bear Lake, Idaho (Flannery 1988). A study of flight paths and direction of American White Pelicans from Gunnison Island demonstrated that as the lake elevation changed in the 1980's and subsequent foraging habitat changed, the flight patterns of pelicans changed (every year) in response to these dynamic conditions (Flannery 1988).

Great Salt Lake foraging environments reflect many of the qualitative values identified for American Pelicans (Anderson 1991). Because of the low gradient bottom of the Great Salt Lake and its associated Wetlands pelicans have thousands of hectares of fisheries that are 0.5-2 m deep. These fisheries are high in nutrients, warm quickly, and provide excellent breeding, nursery, and foraging habitats for "rough" fish. Subsequently these habitats allow for a broad range of American White Pelican foraging strategies. Warm spring and summer days create excellent thermal systems and nearby mountains, islands and promontories form late morning updrafts, all of which assist adults in air lifting forage to awaiting young at Gunnison Island.

Significant life history and migration information for North America's American White Pelican population has been collected from the Utah Gunnison Island colony and associated Wetlands (Behle 1958, Knopf 1975, 1979).

HABITAT AND/OR POPULATION OBJECTIVES:

1. Continue to manage Gunnison and Bird (Hat) Islands for breeding colonial birds with emphasis on American White Pelicans and California Gulls.
2. Provide, through statutory and wildlife rule regulation, breeding season protection from human disturbance to these and other breeding sites as they occur.
3. On the ground visits to breeding colonies should be carefully managed and planned to mitigate against disturbance, abandonment and mortality. Visits should only be made to collect important data and provide key educational outreach toward long term American White Pelican conservation.
4. Key foraging areas should be identified and managed for sustainable fisheries in balance with other Wetland management objectives especially within the Bear River, Ogden River and Jordan River systems.
5. Maintain breeding and foraging habitat within the Great Salt Lake ecosystem so as to provide

conditions that allow American White Pelican breeding adult populations to occur at the twenty-five year average of 10,120 per annum (Table 10).
6. Provide management and protection of breeding colonies from human and terrestrial predation to allow for a > 0.69 nesting survival rate per nest.

MANAGEMENT ISSUES WITH CONSERVATION RECOMMENDATIONS: The American White Pelican is considered a species of moderate concern for conservation action in the North American Waterbird Conservation Plan (Kushlan et al. 2002). Utah hosts one of the largest American White Pelican breeding colonies in North America (Table 10). In 1933 a status report of American White Pelicans in continental North America found that there were only four colonies of significance in the United States, Gunnison Island on the Great Salt Lake was one (Thompson 1933). Three other colonies in Saskatchewan, Canada, in conjunction with the US sites made up the majority of the continental populations. In 1966 a follow up survey indicated a decline in the continental population with only four of the seven 1933 colonies remaining viable, the four US sites (Lies and Behle 1966). In the last three decades the Gunnison Island breeding population has demonstrated an increasing trend. Many other colonies have been compromised due to water diversion or human disturbance. All of Utah's breeding American White Pelicans are located on one site and because this site represents one of the three most stable and productive sites on the continent, it is critical that it be protected. Gunnison Island is sequestered north of a railroad causeway and because of this barrier is protected from most human disturbance. However, recent interest in the development of brine concentration ponds in the vicinity of Strongs Knob within Gunnison Bay have brought industry to the north arm. There has been and is interest in the possible extraction of fossil fuels from the lake bed near Gunnison Island. There is some discussion of breeching the railroad causeway that could potentially make boat trafficking near Gunnison a possibility.

Another management and conservation concern is the potential impact to foraging areas. A principle foraging site is located in the upper reaches of Bear River Bay including the Willard Spur. This is a key area that has been used by American White Pelicans for many decades, even recorded as a foraging site in the journal of early explorers. The site is the nearest foraging habitat to Gunnison Island and is known to support larger numbers of fall migratory American White Pelicans from other populations in addition to Utah pelicans. Potential threats to the integrity of the fishery in Bear River Bay included salt industry expansion, changing salt harvest methods and pond flushing and the dewatering of the system as up stream water use demands reduce flows to the bay. Other marsh area fisheries are challenged by similar potential and real water use practices.

Habitat Loss

1. Develop a sustainable water use plan for Bear River Bay.
2. Work with salt industries to eliminate, reduce or mitigate impacts to the Gunnison Island colony in the north arm and foraging sites in Bear River Bay.
3. Work with the Division of State Lands to protect American White Pelican habitats within state land holdings.
4. Work with Wetland managers within the greater Great Salt Lake ecosystem to manage for pelican habitat as part of their comprehensive management plans.

Human Disturbance

1. Provide modification to the railroad causeway that allows for better Great Salt Lake brine distribution, but precludes boat travel into the north arm of the Great Salt Lake.
2. Maintain and enforce Division of Wildlife Resources rule restricting human disturbance of Gunnison and Bird Islands during the American White Pelican breeding season.

EVALUATION OF ASSUMPTIONS: RESEARCH AND MONITORING

RECOMMENDED RESEARCH

1. Continue the 25 year data base of breeding adult, nest and young surveys.
2. Work with Great Basin waterbird researchers to determine migratory corridors and patterns within and outside the Great Basin.
3. Work with Hill Air Force Base to understand more fully local use areas and time budgets of American White Pelicans to assist in understanding breeding ecology and strategies for reducing risk of bird-strikes to aircraft.
4. Carry out distribution surveys of American White Pelicans throughout western and southern Utah with emphasis on spring, fall and non-breeding migrants.

OUTREACH NEEDS

1. Educate public to the importance of rough fish fisheries to pelicans and other piscivorous birds.
2. Tell the story of Gunnison Island and its value to colonial nesting birds at the Great Salt Lake in Utah, and for the continent.
3. Educate the public at large, lake industries, agencies and NGO's as to the value of the Great Salt Lake ecosystem for western colonial waterbirds.

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

P-3

Public Meeting: *South Davis Junior High School*
298 West 2600 South
Bountiful, Utah

November 7, 2007

Comment Form

Name: Jose Palacios **Address:** 1475 Willow Lane
Park City UT 84098

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

1) No way To Replace LOST OF HABITAT For The THOUSANDS OF PINTAIL DUCKS THAT USE THIS AREA There For REDUCING The POPULATION even FURDER. P-3.01

2) No way To replace The Fresh water marsh That will be lost By This Project. P-3.02

3) The environmental DAMAGE DONE To This AREA will Be irreversable. P-3.03

4) No AMOUNT OF MONETARY COMPENSATION will Be enough TO COMPENSATE For The loss OF HABITAT. P-3.04

5) NESTING AND MOLTING Geese will lose A BIG PART OF Their HABIT in UTAH. P-3.05

P-4

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *South Davis Junior High School* *November 7, 2007*
298 West 2600 South
Bountiful, Utah

Comment Form

Name: Mark Ochsen **Address:** 2415 So 700E
Midvale Ut. 84047

Representing (optional): X **Self** and **Other** (please specify) Back unlimited volunteer

Comments or Concerns:

I left a detailed recording on the digital recorder. But in case that is erased or otherwise, here are my key concerns:
This project on the Bear river bay will cause detrimental impact to wildlife in the following ways:

P-4.01 1- Elimination of seasonal (spring) flooding ~~wo~~ that will eliminate the food growth both algal & invertabrate, for north (spring migrating) birds.

P-4.02 2- During wetter years, no possibility of the growth that ~~of~~ I have seen there of emergent marsh habitat.

P-4.03 3- Elimination of the molting area used by Canada geese in the summer

P-4.04 4- Disruption of natural flows from the Bear River out to the great Salt Lake
(over)

P-4.05 5- Possible changes in lake salinity & higher concentrations of mercury & other heavy metals. (allready a grave concern in our ducks)

P-4.06 6) Once it is gone, none of this can be utilized by the migrating birds at the Bear River Ass. Please don't let this happen!

Mark Olsen

fold over

BIO-WEST, Inc.
1063 West 1400 North
Logan, UT 84321

place postage here

Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

fold over

Transcribed Voice Recorder Comment
Comment taken and transcribed by BIO-WEST, Inc.
At: PUBLIC MEETING FOR PROPOSED GREAT SALT LAKE MINERALS EXPANSION , Bountiful, Utah: November 7, 2007 5-9pm at South Davis Junior High School, 298 W 2600 South.

My name is Mark Olsen. I live at 7415 South 700 East, Midvale, UT 84047. I'm here as both a personal interest and also as a Ducks Unlimited volunteer. I know very little about the Clyman Bay I believe it's called over on the west side of the Great Salt Lake, but on the area on the Bear River refuge, is an area that I am very familiar with and quite intimate with. I've hunted that area for over 40 years. During that time I've seen the lake in it's conditions where it's had both extreme droughts, like we're in this year, and I have also seen it in the flood years when we had areas where it flooded the proposed area that they want to dike and also their facilities that are existing. My concerns that I have for this are many fold. One of the most important things about this area is that it's an area that will constantly have a change of the water flow over the area and cause plant growth and invertebrate growth that they use at various times of the year. In particular I see when I have been out there in the spring, the problem that this area becomes flooded and provides a large amount of food with our spring runoff for the ducks and the other shorebirds and others who utlize that will be eliminated if these 8,000 acres are flooded. That no longer can be flooded by the spring floods and provide the food growth and habits in the spring. I have also seeen that when we have higher water years, when we have 3 or 4 or 5 years in a row that will stay fairly stable with more water, where emergent growth vegetation will come in there and we'll have huge vast acres of alkalie bullrush that will grow and also the cattails when it becomes stable and long enough. These areas become extremely important and useful to the birds both in the spring and the fall migration area. If we change this, and dike this off, another concern is that we will disrupt the flow, the natural flow that we have, for the exit of the bear river in this area. All of the impacts are highly detrimental to the wildlife. Another one as I listened to one of the persons of the corporation explain about their flushing process, when they take some of the water and flush it back into the lake or into the bear river arm, this could greatly increase both selenity problems and mercury and other heavy metal problems that we are now seeing a great impact as they have tested our waterfowl that we are finding both the shovelers the cinnamonteal and the goldeneye were having problems with these being having enough of the heavy metals in these waterfowl that they are not good for the consumption of humans. I see a concentration of these metals possibly occuring with this that could even affect this to a more detrimental situation. I would ask those involved to please consider not allowing this project to move forward. I think it will be a definite detriment to the wildlife involved. Thank you very much

P-5

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *South Davis Junior High School* *November 7, 2007*
298 West 2600 South
Bountiful, Utah

Comment Form

Name: Steve Smith **Address:** 1639 Lakeview Dr
Bountiful UT 84010

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

This is one of the worst examples of corporate greed vs. public interest.

The areas that GSLM is attempting to grab are habitat to 1000s of birds and animals. They also provide recreational opportunities to hunters, boaters, birders, swimmers and those that love the G.S.L. P-5.01

This land can't be replaced and to allow it to be destroyed for G.S.L.M's ability to earn more $ would be a tragic breach of the public trust. (EAST SIDE OF LAKE) P-5.02

My family and I boat + hunt there at least 10 xs every year. Those opportunities would be lost forever if this project is allowed to move forward. P-5.03

P-6

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *South Davis Junior High School*
298 West 2600 South
Bountiful, Utah

November 7, 2007

Comment Form

Name: William Wilkinson **Address:** 5124 Skyline Dr
Ogden, UT
84403

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

The proposed expansion of the East evaporation ponds will have a devastating effect on the Bear River Bay and on the Great Salt Lake. The proposed pond will take 25% of the bay. The approximate 12½ square miles is just too much. It will greatly reduce the water flow from the bay into the rest of the lake. It will destroy much of the habitat where huge numbers of waterfowl rest and feed. 25% of the Pintail Ducks in North America come through this area, 100 000 Green Wing Teal were counted on the proposed site during October of this year. I am extremely concerned about this proposal and I respectfully request that you deny the expansion.

P-6.01

P-6.02

P-6.03

Sincerely

U.S. ARMY CORPS OF ENGINEERS

PUBLIC INFORMATION MEETING ON THE PROPOSED 33,000-ACRE EXPANSION OF SOLAR EVAPORATION PONDS ON THE GREAT SALT LAKE	)))))))	TRANSCRIPT OF PUBLIC COMMENTS

November 8, 2007 * 5:00 p.m.

Location: Ogden Nature Center
966 West 12th Street
Ogden, Utah 84404

Reporter: Kelly Fine-Jensen, RPR
Notary Public in and for the State of Utah

A P P E A R A N C E S

PUBLIC SPEAKERS:

Gary Slot (address not given)	P-7
Pete Hansen 5714 South 5500 West Hooper, Utah 84315	P-8
Wallace Thompson 1213 Hudson Street Ogden, Utah 84404	P-9
R. Jefre Hicks 6680 South 475 East South Weber, Utah 84405	P-10
Troy Thompson 2803 South 2675 West Syracuse, Utah 84075	P-11
Rich Noble 638 West 2525 South Syracuse, Utah 84075	P-12
Dave E. Casperson 4103 West 4000 North Plain City, Utah 84404	P-13
Eric Casperson 2206 North 4500 West Plain City, Utah 84404	P-14

-oOo-

P R O C E E D I N G S

MR. GARY SLOT: (Time noted: 5:48 p.m.)

Well, what I'm worried about is where they are going to get the ground to mitigate this. See, they are going to take 8,000 acres of Willard Spur, prime water fowl habitat. And I don't know any place where they can -- they go 2-to-1, that's 16,000 acres they got to replace, you know, to mitigate. Well, there is no place out there that they can show me where they are going to mitigate and it'll be as good as the marsh there ever was. Right now it's probably P-7.01 going to hurt the whole eco system. And what happens? That Willard Spur is one of the most important eco systems in the whole Intermountain West. All the shore birds, ducks and geese and everything come through there. Just like a magnet. They come to the Great Salt Lake marshes and then they leave. Well, that Willard Spur is the main place where the ducks go.

And I've been at the Bear River Club for 40 years. And the years there is water out in the spur and there is a lot of habitat, you raise twice P-7.02 as many shore birds, ducks. And then the duck shooting is better. And maybe duck shooting ain't

important, but it's a thing. But it's the habitat. All the thousands of birds are not raising. And I'm just worried if they get this project going, that I think it'll foul up the whole eco system.

And I also think that the State is making a big mistake. See, they get money. Well, they are going to let them build it. So say that's going to be 30 or 40,000-acre feet of water they're going to take out of the Great Salt Lake. There are some other places they're trying to build a dam on the Bear River. Well, that's going to take 200,000-acre feet. Idaho is trying to build one. Now Proctor & Gamble is trying to foul along the river. You foul all this water, the Great Salt Lake is eventually going to dry. P-7.03

So people is thinking, "Oh, this is a good deal, we're getting business and this thing," but eventually we're stepping over dollars to pick up pennies. What happens when we there is no lake effect and we don't get no snow in the mountains? And how can you go to Antelope Island when there ain't no water out there? P-7.04

See, the way the populations are going to be taking, the Bear River, it won't go in there. GSL builds that thing and that's going to take its water.

And all this water is going to be so valuable. And it's just destroying a lot of good habitat.

And then I just talked to somebody and he showed me pictures. Now, I never did see it myself, but he showed pictures of where they are discharging salt water back into the Willard Spur and killing the cat-tails and the tulies. Now that's just a picture I saw. I didn't see it myself. So you know, they said they're doing that and hurting more habitat. But I have no idea on that so I don't want to comment on that because you don't know -- if you don't see it firsthand, it's of no use. But them guys was showing me pictures. P-7.05

But I'm just really concerned that my grandkids and great grandkids won't be able to see the Salt Lake or they won't be able to see the shore birds or anything because the way they're doing it, P-7.06

it's all going to dry up. There is other places GSL could build. They could build way out there on the desert where they got the other two and it would be just as effective. It wouldn't take this freshwater. See, Willard Bay is freshwater -- not fresh, but, I mean, it's salty, but a lot fresher than the lake. Well, they can go out there and you wouldn't have no impact on the water fowl. You really wouldn't. P-7.07

I just wanted to give my thing because I don't want -- you know, I want my grandkids to see the stuff I have. But -- you know, it's a problem of everybody's.

So thank you for your time. But I just had to say it because you get old. I thought I won't be around, I'll be dead, but my grandkids will be.

So thank you.

(Time noted: 5:52 p.m.)

MR. PETE HANSEN: (Time noted: 6:49 p.m.)

P-8.01
(Continuing through p. 8 of transcript)

They say there will be no environmental damages when they're dumping salt water into the marshlands. I'd say it's doing environmental damages.

MR. SIM: She doesn't actually know much about the project, but if you're more comfortable, you can direct your comments to me. I'll sit in.

MR. HANSEN: That's fine.

GSL is claiming innocence, they haven't done any damage, but I can take you out to the backside of Willard and show you where there is nothing there now but magnesium and mud. Where it used to be all grasslands, cat-tails, everything, ducks and geese, nothing there now. Because GSL is blowing their dikes. And they quit blowing them

because they got caught. Now they dig them out with a big Cat and put head gates and pipes through. And they are flooding the backside, towards the east and stuff, on that bay.

They're dumping the water right out of this area (indicating on a photo).

MR. SIM: What area is that?

MR. PETE HANSEN: Coming in -- this area -- is that the right picture?

MR. SIM: Just because she's writing down the comments, I want to make sure that that gets in there.

MR. PETE HANSEN: Yeah. It's right in here (indicating).

MR. SIM: Northern most ponds there?

MR. PETE HANSEN: East and north. Yeah.

And they say they're not doing anything. This is their ponds and they drain the salt out. This was all vegetation and stuff. Now this is barely growing.

There is one of the sink boxes. This water runs all the way around the backside of the GSL, on the east side and part of the north side. And their dike is on the south end.

That was all freshwater. It's full of

magnesium, salt. Dogs can't even drink it. Birds won't habitat it. It's totally destroyed.

Here is another picture that they say they don't do. This is also right there in the same area.

This is another one they say they don't do. This used to be three, four-foot tall. Now it's about two to three inches tall. They opened the dam. They said, oh, they don't do that. They said they don't put heads gates in. There is a pipe coming out and head gates over here. This coming out this way is the backside into their pond and it comes this way.

Here is another one. Salt water coming out. Coming out of their head gates. Say they don't put them in, don't open the dikes, don't do nothing environmentally unsafe? He's talking through his teeth like a liar. You ask them about it and they'll look right at you. Marriot is in charge of their dikes and he's the one opening them.

Nobody wants to do anything. Everybody says, "No." But if U.S -- but if Army Corps of Engineers does it, you're going to ruin thousands and thousands of acres, wetlands, migratory birds, one of the biggest areas they got. And if that's gone -- that's mostly freshwater. P-8.02

They don't want to disturb the other side of the lake because of the brine shrimp? Well, they're going to dump salt water into the other side. What's that going to do to the land? It's going to ruin the whole ecology. P-8.03

Nobody wants to do anything about it.

The guy that's in charge of all that, guy with the U.S. Forest Service, he's in charge of -- what's the name of that land -- solvent lands. He came out and he seen this. I asked him, "How often do you come out here?" He's a GS-12. Can't remember his name.

He says, "I've never been out here."

I says, "How can you manage a project you've never been out on?"

I says, "Look at these holes."

He says, "Well, I don't know what they can do and what they can't do."

Now if he's getting paid GS-12 wages and he isn't doing anything, wait a minute. Something is going on. GSL is paying people under the table. All say that right now. I'll tell it to their faces. They might want to sue me for it, but they won't get nothing. You haven't got nothing, they can't get it.

But it's sad. I can take anybody out

there right now and show them the destruction that they've done. The head man of your Corps of Army Engineers, he said he's only been out there once. He probably rode around on the GSL dike. He never went out on a boat and went around over there to see anything. They'll show him around what they want him to see.

Harold Crane is just to the back of that. Harold Crane used to feed that canal all the way around with freshwater. GSL took it over and totally destroyed it. And that runs from the backside of Willard Bay, clear over to Promontory. There is a big mud flat over there. And those birds use that mud flat and Salicornia and everything growing on it. And what they want to take right now, they call it the weeds, the Islands, there is all kinds of vegetation out there. You can't see it anywhere unless you fly over it, unless you drive over it in an air boat. It's totally going to be destroyed. P-8.04

And a lot of people use it. People use it all summer long. Go for boat rides and picnics. Air boaters use it for hunting. Long shafters go out when the water is deep enough. Bird watchers go out. And going on the other side of Promontory and come back out and look, that'll all be gone. Road that P-8.05

goes down there, public launch, they'll take all of it. And it's not right.

Somebody has got to stop it. Somebody has got to say something. All it is right now in the whole thing -- he says the same thing, it's political and nobody is going to do anything about it because nobody cares.

And this Steve Williams, the head of the Federal Voice, right here, the Director, Steve Williams, he says you have a problem with wetlands and stuff being destroyed, write him a letter. We sent him a registered letter. We sent him pictures. We sent him everything. What did he do? He sent it to Denver and Denver sent it back and said, "It's not our problem."

So where do you go?

We've spent hours trying to fight this. And we just hit our head against a stone wall. And it's not right.

If they close it, that's what they'll do. Everything is going to be pushed into Ogden Bay. Ogden Bay is so polluted with fragmite. Half the water is gone out of there because of it. Nobody cares. Farmington Bay, they're trying to work on it. Harold Crane, they're trying to fix. Fish & Game

don't care. They say there is nothing they can do. Well, heck, if there is nothing they can do, what's going on? They say -- Fish & Game come right out and told us, "There is nothing we can do. It's political and big money."

Now that's pretty sad.

That's about all I can tell you on it.

Want to put my name on there, you can. Pete Hansen.

And I've been a burr in their side for a long time. Even Al Trout. He has destroyed so much land up in Box Elder County and Bear River. He's not a sportsman. He'll tell you he is. But he's not. He told us about four years ago, in an air boat meeting, as far as he was concerned, he didn't care if he gave us a half inch water or ten foot of water because he hated all air boaters and anybody who hunted out of them, or any long shafters, unless they were in his Bear River. Air boats can't go in there.

Know where we used to hunt a lot? Al Trout moved boundaries and closed them. And nobody wanted to fight that.

So it's been going on. It's not just -- it's just the little people, little sportsmen are getting shafted. Money talks and -- excuse the

French -- but shit floats and comes to the top. And I'd hate to see the Corps of Army Engineers -- they've already got a black eye with Willard Bay. And that won't be filled up again until 2010, 2008. Because they got to get the money appropriated to fill at least four miles over there. And while they're fixing that, the west side is sinking. And it's built on marshlands. There is no bottom.

So Army Corps of engineers, they've got their butt in a ringer. I hate to see it because there are a lot of good people in there. And they do try. But they get in the same thing, bureaucracy and big money. And it's sad.

So we'll leave you people.

You have anything you wanted to say?

MR. WALLACE THOMPSON: Yeah. I wanted to make a comment.

On all that solvent land they made a law you can't run a four wheeler, ATVs. And yet they'll let GSL build dikes to block off the whole area so nobody has access to it; is that right? P-9.01

MR. PETE HANSEN: Solvent land, you can't run anything on it because it's solvent land. Yet GSL can build anything they want.

Now where is the pro and con on that?

MR. WALLACE THOMPSON: That's about all I've got to say on it.

MR. PETE HANSEN: This is what we've been fighting for years. Same thing. A lot of people that are involved, you know. They all feel the same way. And you can't blame them. A lot of people get to the point and say the same thing, "There is nothing we can do."

MR. WALLACE THOMPSON: Thanks for listening.

MR. PETE HANSEN: Hope it did some good.

(Time noted: 7:02 p.m.)

MR. PETE HANSEN: (Time noted: 7:05 p.m.)

If they build those dikes like they want to do, it's going to raise all the water level, freshwater level, that's outside of that. And see, we run and the ducks and stuff, they like water from two inches to maybe a foot. And that's what we run on and that's what the sportsmen use. If they build those dikes, that's going to raise that to three, four, five foot. And there won't be no feed, no vegetation left out in that area. It would totally be destroyed. And GSL doesn't care. I'm sorry. They are only in it for the money. Rather make a dollar. And that's what they're trying to do.

P-8.06

And it will affect the brine shrimp on the other side. P-8.07

Thank you. Have a good day.

(Time noted: 7:06 p.m.)

MR. R. JEFRE HICKS: (Time noted: 8:12 p.m.)

I wanted -- this is an addendum to my comments.

And I also wanted to say that partially down the new dike in the Bear River Bay, proposed dike, there is the mud bar that comes out from the Bear River Bird Refuge out to -- basically it would connect with the new proposed boundary. That is typically sheetwater with the new dike. And it would force GSL as a mitigation to create a channel or a canal there. That destroys the sheetwater that we feel is necessary for wildlife to feed and loaf in that they've traditionally had. There is no way to replace that sheetwater with a 30-foot-wide canal. It's not the same. P-10.01

If they were to put a water control structure on that canal, if they were to do that, I'm afraid it would back up water artificially into Willard Spur and create even more problems. P-10.02

So I am opposed to that, to any water

control structures that would artifically back water up into Willard Bay and Bear River bay.

That's it.

(Time noted: 8:15 p.m.)

MR. TROY THOMPSON: (Time noted: 8:17 p.m.)

The thing that concerns me the most with this whole proposed 8,000-acre expansion on the Bear River Bay is the amount of shore birds, water fowl and migratory birds that use this bay as a staging ground as they come down the fly way. The fly way being, you know, where the birds come in from Canada and stuff and stage in these areas. A lot of them being Pintails, swans, Divers, Redheads. You know, the ducks that are -- that need this area to loaf on and to rest and to build their energy levels up to continue south or north, because they use both directions. P-11.01

And the habitat loss that will be generated by this 8,000-acre expansion is irreplaceable, because it's one of the only freshwater bays in the whole chain of the Great Salt Lake. And 60 percent of the water, the freshwater that comes out of that Bear River Bay is -- I mean, that's irreplaceable, that they're going to destroy.

The other affect that I feel it will have on the area is if they dike that up, that it will make the spur of Willard deeper. And by doing that, they'll ruin thousands upon thousands of acres of wetland and habitat up farther to the east by forcing that water up in there unnaturally. And if the sheetwater and stuff that's out there that these birds loaf on, that's only inches deep, it's just irreplaceable to the whole eco system of things and the way these birds for thousands of years have used that area. P-11.02

I just feel it's a really big mistake to let them do that because of all of the habitat that it's just going to destroy for these bids.

Thank you.

(Time noted: 8:19 p.m.)

MR. RICH NOBLE: (Time noted: 8:40 p.m.)

My name is Rich Noble. I live in Syracuse, Utah.

And I am concerned about the environmental impact that this proposed expansion of GSL dikes system would have on the fragile eco system in the Willard Spur, what I call the Willard Spur area. P-12.01

I am concerned that any loss of acreage or land and the area that the birds, all shore birds,

P-12.01 (Continued)

water fowl, hawks, eagles, all those birds that migrate through the Great Salt Lake or Great Basin that fly through this fly way, would be severely impacted if this wasn't done correctly or right.

I'm concerned that we're losing ground. And what are we getting for it? I would like to see something in regards to GSL make commitments then to the "friends" of this area to be infringed upon, compensated some way, that we could improve this fragile eco system and be in harmony with that GSL dike that they want to expand.

P-12.02

My real concern is that we have millions of birds that fly through this area coming and going from north to south, and that these birds that feed upon -- in good weather or water condition years -- they feed upon the weeds, the sago pond -- sago pond weed that houses microorganisms and grubs and stuff that birds eat. And then they become fat and healthy and fly north and have babies, just to be as blunt as I can. If they are in good health, they get up there and produce more birds, have a better hatch and fly back down here. And then people can enjoy it, whether bird watchers or hunters or whatever. But the people who are supporting all this are normally sportsmen. You don't see all these other groups

P-12.03

trying to raise money so that we can protect this environment.

I would hope that there would be some good, common sense and that the parties involved in this, if GSL wants to go ahead and expand, what would GSL be willing to do to assist and build up that area and not that we, as "friends" of the Willard Spur, be concerned that we're going to have something taken away and never replaced.

P-12.01 (restating point)

The environment with this Great Salt Lake affects a lot of industries in the State of Utah. We know what the lake effect is here. We know that when the lake is in good condition, brine shrimp is grown.

P-12.04

We have a lot of good lake effect snow storms, which brings in millions of dollars of income from tourists into the State of Utah. What happens if the lake continues to go down or if we keep pumping stuff out? Maybe this expansion certainly wouldn't detract from

P-12.05

that, but what we're trying to do here is to save a very fragile environment, an eco system out there, that not very many people know and understand how fragile it is. We know how fragile it was back in the '80s when the lake rose and the salt water killed everything off. The dikes were destroyed, the roads were destroyed and the salt killed everything.

P-12.06

What we're concerned about here is that if we have salt evaporation ponds and if that is discharged into this freshwater environment, it's going to kill things. And the ducks and the birds and all those things that are living in that system right now will either stop coming here or they'll die off. And the fly way patterns will change. And generations to come won't have the opportunity that we've been blessed to have. P-12.07

So I guess my final comment is just please use common sense with this. GSL would have to be able to come up with some kind of a plan that would say this is what we want to do. P-12.01 (restating point)

And it's my understanding that GSL contributes something like $3 million a year annually to a general fund. And if that's the case, where is that money going to assist or helping the "friends" that we talk about of this eco system, all along the Wasatch front? And if it could be earmarked or put in an endowment or something like that that we can benefit from it. When I say "we," we're talking about the eco system. And people, whether bird watchers or sportsmen or hunters, can enjoy this eco system for years to come.

Thanks.

(Time noted: 8:47 p.m.)

MR. R. JEFRE HICKS: (Time noted: 8:48 p.m.)

I wanted to add that I'm concerned that taking 8,000 acres out of Bear River Bay will concentrate the migrating water fowl. And during the migrations concentrate the water fowl even more than they are now. And they really need to spread out.

And that's a real concern when it comes to botulism. There has been some huge die offs in those flats before. And the more concentrated the birds are, the higher the likelihood of a massive die off. P-10.03

Taking out 8,000 acres of the bay, concentrates those birds and puts them at risk.

Thank you.

(Time noted 8:49 p.m.)

MR. DAVE E. CASPERSON:

(Time noted: 8:50 p.m.)

Appreciate this.

We've spent many years out there in that area and seen the expansion of GSL out there. I just have a few concerns other than the mighty dollar out there.

I think for the most part, they do a pretty good job. The way the outlay is, in my

opinion, is going to cause some irreversible damage in that area. And the flow that comes from the canal and the Bear River Bird Refuge will flow directly through that area they are trying to block off. That will actually eliminate the water flow in that area to the west and northwest of there. Which will also concentrate the little water they have out there. P-13.01

We've had some botulism outbreaks out there, outbreaks that can cause some major problems for the birds out there. And this will further concentrate the birds and cause an even bigger die off than we've had out there in the past. P-13.02

Also, I think accessibility and -- not only for hunting, but also for recreation, we actually are using that for recreation out there, too. But that's one of the main concerns we have is the accessibility out there in that area. P-13.03

I've forgotten everything else I was going to say. I think that's it for now.

Thank you.

(Time noted: 8:55 p.m.)

MR. ERIC CASPERSON:

(Time noted: 8:56 p.m.)

I agree also with the access to the water out there. The dike, if they -- it will limit the P-14.01

access to there. Also concentrate all of the birds and result in a higher death of water fowl due to botulism. P-14.02

And if they tried to shorten it or modify the dikes in any way that would give access to the water to the Great Salt Lake and give us access throughout the year, that we would be able to possibly compromise, to find a solution to satisfy both we and them. And to be able to help out the eco system. P-14.01 (Continuing)

At times the GSL will have breaches in the dike and this -- the high salinity of water that is put into the freshwater kills the fragile eco system that exists out there now. It kills the reeds, the insects and the food supply that the water fowl depend on. P-14.03

Restricts the nesting grounds and rest areas that the birds are able to sit in and rest and be able to get away from predators, and even hunters themselves. P-14.04

So if there is anyway they can modify their project, that these would possibly help.

Thanks.

(Time noted: 9:00 p.m.)

(Public meeting concluded at 9:00 p.m.)

REPORTER'S HEARING CERTIFICATE

STATE OF UTAH)
: ss.
COUNTY OF SALT LAKE)

I, Kelly Fine-Jensen, Registered Professional Reporter and Notary Public in and for the State of Utah, do hereby certify:

That said proceeding was taken down by me in stenotype on November 8, 2007, at the place therein named, and was thereafter transcribed, and that a true and correct transcription of said testimony is set forth in the preceding pages;

I further certify that I am not kin or otherwise associated with any of the parties to said cause of action and that I am not interested in the outcome thereof.

WITNESS MY HAND AND OFFICIAL SEAL this 16th day of November, 2007.

_____
Kelly Fine-Jensen, RPR
Notary Public
Residing in Salt Lake County

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Received: from gw4.usace.army.mil ([140.194.100.160]) by cmx2.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Thu, 8 Nov 2007 09:44:08 -0600
Received: from mail.us89.net ([209.90.90.181]) by gw4.usace.army.mil with ESMTP; 08 Nov 2007 15:44:08 +0000
Received: from yourd569fbdad0 (unverified [205.208.177.81]) by mail.us89.net (Rockliffe SMTPRA 7.0.6) with ESMTP id <B0019795633@mail.us89.net> for <jason.a.gipson@usace.army.mil>; Thu, 8 Nov 2007 08:43:51 -0700
Content-class: urn:content-classes:message

Subject: losing 8000 acres of waterfowl habitat to GSL Minerals.
Date: Thu, 8 Nov 2007 07:44:11 -0800

Message-ID: <MBEJLCBDMAOFPPKGKHNKGENICBAA.darin_lish@myfam.com>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: losing 8000 acres of waterfowl habitat to GSL Minerals.
Thread-Index: AcgiHjSX7+E6lWqDQuyUhbwgAs9WBw==

From: "Darin & Alicia Noorda" <darin_lish@myfam.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

Jason, or To whom it may concern.

my work schedule prevents me from making it to the meeting regarding the expansion of GSL minerals. i an an avid waterfowl hunter and conservationist, this is an unbelievable loss of habitat to waterfowl and other imgrating birds. by expanding those mineral ponds by 8,000 acres would DRAMATICLY impact the waterfowl and other migrating birds that inhabit the bear river bay area. I STRONGLY oppose the notion that is being put for to expand GSL minerals and ruins more habitat to development all for the sake of a company making more $$$. Please consider the greater picture as im sure you are by the impact of this type of expansion. P-15.01

Thank You,

Darin Noorda
Tremonton Utah.

P-16

Received: from eis-ml1rdp.eis.ds.usace.army.mil ([140.194.151.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Thu, 8 Nov 2007 05:52:58 -0800
MIME-Version: 1.0
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X-MimeOLE: Produced By Microsoft Exchange V6.5
Received: from wmx2.usace.army.mil ([140.194.151.34]) by eis-ml1rdp.eis.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Thu, 8 Nov 2007 05:52:56 -0800
Received: from gw2.usace.army.mil ([140.194.100.150]) by wmx2.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Thu, 8 Nov 2007 05:52:56 -0800
Received: from bay0-omc1-s29.bay0.hotmail.com ([65.54.246.101]) by gw2.usace.army.mil with ESMTP; 08 Nov 2007 13:52:56 +0000
Received: from BAY138-W20 ([64.4.49.55]) by bay0-omc1-s29.bay0.hotmail.com with Microsoft SMTPSVC(6.0.3790.3959); Thu, 8 Nov 2007 05:52:55 -0800
Content-class: urn:content-classes:message

Subject: Great Salt Lake
Date: Thu, 8 Nov 2007 05:52:55 -0800

Message-ID: <BAY138-W205224575A8AF1024B0944A48B0@phx.gbl>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Great Salt Lake
Thread-Index: AcgiDquDSfBxO9E2Qy2T8tJT5gPe/A==

From: "bill stevens" <wpstevens@hotmail.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
.hmmessage P { margin:0px; padding:0px } body.hmmessage { FONT-SIZE: 10pt; FONT-FAMILY:Tahoma }

Dear Mr. Gipson:

I would like to object most strongly to the project proposing three evaporation ponds covering 33,000 acres in the Great Salt Lake. The lake is a vital venue for over five million birds. The lake's productivity and viability has been chipped away at over the 150 years since settlers came into the region. In a time of environmental uncertainty, further degrading the lake as avian habitat is highly questionable. Migrating birds from all over the intermountain west and from Canada use the lake as a vital stop-over. The proposed action is contrary to the spirit (if not the law) of the Migratory Bird Treaty. P-16.01

I urge you to consider the cumulative effects of industrial projects on the avian habitat of the Great Salt Lake. One project in itself may not show deleterious effects, but taken as a whole, habitat is degraded. We cannot truly quantify when that habitat degradation may reach a critical threshhold. I believe that the importance of the Great Salt Lake to avian life outweighs the benefits of the proposed project.

I would like to be informed when the environmental document is available. Thank you,

Kate Stevens
151 Arches Drive
Moab, UT 84532
4335-259-2633

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

P-17

Public Meeting: *Ogden Nature Center*
966West 12th Street
Ogden, Utah

November 8, 2007

Comment Form

Name: Nicholas Pizer **Address:** 1242 E 3100 N
N. Ogden
UT 84414

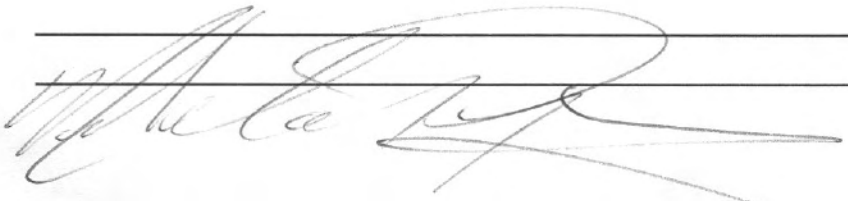
Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

Wanted to express my concern over proposal listed in sheets attached to this form. I see no good out come by implementing proposed containment area/holding ponds - Beside destroying many acres of Wetland and area available for hunter usage - My wife is disabled & this would remove much area she has access too - using a walker limits her hunting area. We do not need more of our Wetlands taken - It should be the other way around.

P-17.01

P-17.02



P-18

Received: from eis-ml1itl.eis.ds.usace.army.mil ([140.194.245.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Fri, 9 Nov 2007 14:06:52 -0800
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X-MimeOLE: Produced By Microsoft Exchange V6.5
Received: from cmx2.usace.army.mil ([140.194.245.34]) by eis-ml1itl.eis.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Fri, 9 Nov 2007 16:06:50 -0600
Received: from gw2.usace.army.mil ([140.194.100.150]) by cmx2.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Fri, 9 Nov 2007 16:06:50 -0600
Received: from outbound-smtp6.firstam.com (HELO outbound-smtp.firstam.com) ([69.87.54.11]) by gw2.usace.army.mil with ESMTP; 09 Nov 2007 22:06:41 +0000
Received: from 10.48.129.31 by outbound-smtp.firstam.com with ESMTP (Hello SMTP Relay); Fri, 09 Nov 2007 14:06:35 -0800
Received: from corp1.firstam.com (HELO fahqsna01smxs11.corp.firstam.com) ([172.17.247.11]) by FAEMSNA01SMXS01.firstam.com with ESMTP; 09 Nov 2007 14:06:35 -0800
Received: from tiswphx01sxch05.corp.firstam.com ([172.16.80.176]) by fahqsna01smxs11.corp.firstam.com with Microsoft SMTPSVC(6.0.3790.1830); Fri, 9 Nov 2007 14:06:26 -0800
Content-class: urn:content-classes:message
Subject: GSL Evaporation Pond Expansion
Date: Fri, 9 Nov 2007 14:06:25 -0800
Message-ID:
<DA92ED629FA03E4AAA66F45B6F8CC13C0914CB9D@tiswphx01sxch05.corp.firstam.com>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: AcgjHMUFCdMufDCoRjWdgBVFsSnpXQ==

From: "Iverson, Eric" <eiverson@firstam.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

Mr. Gipson,

I would like to take a minute to voice my utter and complete disapproval of the GSL expansion. It is wrong on so many levels.

The foremost is the uniqueness of the area. There are few places like this in United States, let alone in the world. During normal years the area is a major staging (and loafing) area for so many species of birds. Most importantly the northern pintail, which as you may or may not know, is struggling to maintain long term populations. I cant think of one positive thing that would come about as the result of destroying part of an ecosystem (a couple hundred jobs is not worth it). I could go on and on about all that is wrong, i.e corporate greed, with this proposal, but I think my point has been made. P-18.01

Thanks for your time and effort, and hopefully I am not alone in my opinion.

Sincerely

Eric K. Iverson

Escrow Officer

First American Title Insurance Agency

5926 South Fashion Pointe Drive #120

South Ogden, UT 84403

Phone: 801-479-6600

Efax: 1-866-464-4408

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P-19

Received: from eis-ml1rdp.eis.ds.usace.army.mil ([140.194.151.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Fri, 9 Nov 2007 16:03:10 -0800
MIME-Version: 1.0
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X-MimeOLE: Produced By Microsoft Exchange V6.5
Received: from wmx2.usace.army.mil ([140.194.151.34]) by eis-ml1rdp.eis.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Fri, 9 Nov 2007 16:03:09 -0800
Received: from gw3.usace.army.mil ([140.194.153.3]) by wmx2.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Fri, 9 Nov 2007 16:03:09 -0800
Received: from sinclair.provo.novell.com ([137.65.248.137]) by gw3.usace.army.mil with ESMTP; 10 Nov 2007 00:03:08 +0000
Received: from INET-PRV-MTA by sinclair.provo.novell.com with Novell_GroupWise; Fri, 09 Nov 2007 17:03:07 -0700
Content-class: urn:content-classes:message

Subject: GSL Evaporation Pond Expansion
Date: Fri, 9 Nov 2007 16:03:05 -0800

Message-ID: <473492FD.EB7E.00DE.0@novell.com>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: AcgjLRRdpRyE4xDoQcKq7BlGLmDbtw==

From: "Nick Pew" <npew@novell.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

Mr. Jason Gipson,

I am against the expansion of the GSL Evaporation Pond, I feel that the impact to the ecosystem of this area needs to be considered. The proposed expansion dike will further concentrate waterfowl into an area already prone to botulism outbreaks. This is already a problem that we as people have caused, and we should do all we can to prevent making it worse. P-19.01

It is impossible to replace this particular freshwater bay ecosystem, The Salt Lake is important to me and I don't want to see it's further destruction of this precious part of Utah. The proposed dike will prohibit water sheeting around the mud bar which protrudes south out of the Bear River Refuge. This refuge is so important to so many animals, that already have lots of challenges facing them in the area of human encroachment on their habitat. Pintails need this area for their migration (huge staging area). They are one of the US Fish and Wildlife's species of concern. They are one of the duck species who's numbers are declining. P-19.02

They need this vital habitat to rest and feed as they continue to migrate south, and on their return north to the breedinggrounds. 25% of North Americas Pintail population use this area during migration. The loss of this habitat will further hurt efforts to help them have successful migration. P-19.03

Thank You for considering these important issues.

Nick Pew

P-20

Received: from eis-ml1itl.eis.ds.usace.army.mil ([140.194.245.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Sat, 10 Nov 2007 09:44:40 -0800
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Received: from qmta03.emeryville.ca.mail.comcast.net ([76.96.30.32]) by gw1.usace.army.mil with ESMTP; 10 Nov 2007 17:44:37 +0000
Received: from OMTA05.emeryville.ca.mail.comcast.net ([76.96.30.43]) by QMTA03.emeryville.ca.mail.comcast.net with smtp id B4361Y0040vp7WL0107c00; Sat, 10 Nov 2007 17:44:39 +0000
Received: from D41G17C1 ([24.2.64.132]) by OMTA05.emeryville.ca.mail.comcast.net with comcast id B5kd1Y0032rC9pC0000000; Sat, 10 Nov 2007 17:44:39 +0000
Content-class: urn:content-classes:message

Subject: Evaporation pond expansion at bear river bay
Date: Sat, 10 Nov 2007 09:44:48 -0800

Message-ID: <000901c823c1$63bf7090$6601a8c0@D41G17C1>
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X-MS-TNEF-Correlator:
Thread-Topic: Evaporation pond expansion at bear river bay
Thread-Index: AcgjwV6vDoMC4LVqQGaL5RLhFGnwnQ==

From: "Annie" <michael5244@comcast.net>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

I would like to comment on this expansion and the reasons that it should NOT be allowed to proceed.

This area is used by thousands of waterfowl every year while thay migrate threw are state,if you allow GSLM to expand their operations and use this area for no other pupose but make more money and to destroy the limited resources the birds already have while migrating threw are state than I am sadened by your decision. P-20.01

I Michael A. Lucero on this day 11/10/2007 post my view to NOT allow this and will jion others that are against allowing GSLM to expand there operations into the Bear River Bay.

Thank you for your time and I hope you will make the right decision.

Received: from eis-ml1itl.eis.ds.usace.army.mil ([140.194.245.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Mon, 12 Nov 2007 20:19:21 -0800

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Received: from wnpgmb01-c600f.mts.net ([172.17.170.28]) by mx-mtaout01.mts.net with ESMTP id <20071113041917.IUBS15940.mx-mtaout01.mts.net@wnpgmb01-c600f.mts.net> for <jason.a.gipson@usace.army.mil>; Mon, 12 Nov 2007 22:19:17 -0600
Received: from slkrmb01dc1-255-69.dynamic.mts.net (HELO Chris) ([142.161.255.69]) by wnpgmb01-c600f.mts.net with SMTP; 12 Nov 2007 22:19:17 -0600
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Subject: GSL Evaporation Pond Expansion

Date: Mon, 12 Nov 2007 20:19:05 -0800

Message-ID: <000f01c825ac$54e426a0$6464a8c0@Chris>
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X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: AcglrF2Q9Di0yLgfTXySiAaRSqn8Kw==

From: "Chris Benson" <netleymarsh@mts.net>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

Hello,

I understand there a plan to expand the Great Salt Lake Evaporation ponds, at the cost of the Utah marsh ecosystem. The value of these fresh water ecosystems is impossible to put a price on, fresh water more than anything else is by far the most important natural resource we have. To destroy an important wetland such as this is a grave mistake. P-21.01

This area is also a very important staging area for thousands of waterfowl species as well as many other animals. These wetlands can not be replaced when they are destroyed.

I implore you to reconsider.

Thank you for your time,

Chris Benson

P-22

Received: from eis-ml1itl.eis.ds.usace.army.mil ([140.194.245.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Mon, 12 Nov 2007 19:11:01 -0800
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Received: from web50312.mail.re2.yahoo.com ([206.190.39.214]) by gw1.usace.army.mil with SMTP; 13 Nov 2007 03:10:58 +0000
Received: (qmail 89577 invoked by uid 60001); 13 Nov 2007 03:10:57 -0000
Received: from [66.199.122.164] by web50312.mail.re2.yahoo.com via HTTP; Mon, 12 Nov 2007 19:10:57 PST
Content-class: urn:content-classes:message

Subject: Proposed GSL project
Date: Mon, 12 Nov 2007 19:10:57 -0800

Message-ID: <638376.88096.qm@web50312.mail.re2.yahoo.com>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Proposed GSL project
Thread-Index: AcglotG72GACUNuoQei6S+y5L1nMfA==

From: "Jeremy Richards" <gander311@yahoo.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

Dear Mr. Gipson,

I am writing you concerning the proposed GSL expansion into the Bear River Bay area. I would like to strongly voice my opinion in opposition of the negative impact I feel that would have on a crucial wetland habitat that is vital to the ecosystem of the surrounding marsh and habitat. It provides substantial breeding and roosting grounds for the thousands of wildfowl that frequent the area, both on a year round basis for resident wildlife, but just as crucially for the thousands of migrating birds that stage in the area. P-22.01

Please take into consideration the negative impact this would have on the areas wildlife both in the immediate future, and also future negative effects on the breeding and migration habits and patterns.

Thanks for your time.

Sincerely,
Jeremy Richards
Vice President Great Basin Chapter of Delta Waterfowl

P-23

Received: from eis-ml1rdp.eis.ds.usace.army.mil ([140.194.151.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Mon, 12 Nov 2007 07:02:28 -0800
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Received: from mail.hoganconstruction.com (HELO hoganconstruction.com) ([208.53.36.86]) by gw2.usace.army.mil with ESMTP; 12 Nov 2007 15:02:26 +0000
Content-class: urn:content-classes:message
Subject: Concerning hte Expansion Ponds near Willard Bay

Date: Mon, 12 Nov 2007 07:02:24 -0800
Message-ID:
<DA21A9BD8E2E6E428ED4635F7101ACAC74E0A0@jefferson.hoganconstruction.com>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Concerning hte Expansion Ponds near Willard Bay
Thread-Index: AcglPQg/gdM/dJ/sRemPW9GeauwssA==

From: "Ryan Page" <Intern@hoganconstruction.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
st1\:*{behavior:url(#default#ieooui) }

Jason,

I'm sure by now, you have received a few emails from general concerned "waterfowlers". I am one of those who would like to express my concerns about the proposed ponds.

I have been an avid outdoorsman for some time now, hunting, fishing and camping all along the Wasatch front. In recent years, ive put more focus on the waterfowl side of things. It's played a huge roll in my life, and in recent month's recovery from surgery.

I can understand the necessity of expansion and construction since I work for a large construction firm based in Salt Lake. We need land to grow and to prosper. To quench the needs of the public, it's the whole supply and demand. But there is a greater demand for this area that is proposed to become P-23.01

evaporative pools. Hundreds of thousands of waterfowl, shorebirds and common Avery pass through the Wasatch front. It's a funnel that draws in these birds to prime breeding and nesting grounds, a place to rest along their migratory routes. If you focus on this small fresh water area, that is one of the FEW that is located right next to the Bear River Bird Refuge that needs all the help it can. I don't think that's fair. P-23.02

I have made it known that I am fully against the proposed location, build it somewhere else that's fine. But please reconsider the location. The Great Salt Lake has other areas to use. P-23.03

Thank you for your time.

Ryan Page

P-24

Received: from eis-ml1rdp.eis.ds.usace.army.mil ([140.194.151.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Tue, 13 Nov 2007 10:49:02 -0800

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Received: from barr18.dsdmail.net ([163.6.5.18]) by gw2.usace.army.mil with ESMTP; 13 Nov 2007 18:48:59 +0000
Received: from GW-IA2.dsdmail.net (gwia2.dsdmail.net [163.6.5.44]) by barr18.dsdmail.net (Spam Firewall) with ESMTP id 00FC913BC2E for <Jason.A.Gipson@usace.army.mil>; Tue, 13 Nov 2007 11:48:58 -0700 (MST)
Received: from DSDOMGW2-MTA by GW-IA2.dsdmail.net with Novell_GroupWise; Tue, 13 Nov 2007 11:48:42 -0700
Content-class: urn:content-classes:message

Subject: Evaporating Pond
Date: Tue, 13 Nov 2007 10:48:44 -0800

Message-ID: <47398F1C.7989.00EB.0@dsdmail.net>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Evaporating Pond
Thread-Index: AcgmJduqADHUDq/IQoGE37pd3PwtbQ==

From: "Elaine Page" <EPAGE@dsdmail.net>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

US army corps of Engineers are proposing a large evaporating pond that will take place of one of the few fresh water areas for migratory birds. P-24.01

I would like to express my concern about losing habitat and its impact. It could be moved to another location, besides being next to the Bear River Bird Refuge. P-24.02

Thank you,
Elaine Page

Elaine G. Page
South Davis Jr. High
Attendance
402-6406

Please note my new e-mail address is
epage@dsdmail.net

P-25

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

NOV 13 2007
J6

Public Meeting: *Ogden Nature Center*
966West 12th Street
Ogden, Utah

November 8, 2007

Comment Form

Name: Ronald Smith **Address:** 2865 N. 150 W.
North Ogden Ut.
84414

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

① During the presentation the representative from GSL stated the residual cadmium and mercury left over after evaporation would be discharged back into the lake. These 2 items are regulated as hazardous waste by 40 CFR and must be handled as such. How is GSL going to assure the metals do not exceed regulatory levels in the discharge? How will this waste be collected and disposed of if the discharge does exceed TCLP levels as defined in 40 CFR. P-25.01

② Where will the public repository be located to allow viewing of the draft EIS. P-25.02

P-26

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Airport Inn Conference Room* *November 14, 2007*
2333 W. North Temple
Salt Lake City, Utah

Comment Form

Name: [illegible] **Address:** [illegible]

Representing (optional): ✓ **Self** **Other** (please specify) the memorial [illegible]

Comments or Concerns:

(1) It's very important to look long term, not just 20 or 30 or even 50 years out. Concerning the birds, it's best in my opinion to have a sense of how long they've been coming there and what has effected them. Release for example have been known to cause an over abundance

P-26.01

(2) Concerning the last part of the proposal, the 10 mile island and evaporation pond, doesn't seem too close to Gunnison Island. The areas west of Gunnison are much more valuable than on the other side. If the bird population on the island is a concern, the expansion will bring the predators closer already, and an earthquake [illegible] or a wrecking [illegible] possibly accelerated by climate change, may use up water from streams in the drainage and even the evaporation process itself, could [illegible] considered over long periods of time, lower the lake level to catastrophic proportions.

P-26.02

-2-

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Airport Inn Conference Room*
2333 W. North Temple
Salt Lake City, Utah

November 14, 2007

Comment Form

Name: [illegible] **Address:** [illegible]

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

[illegible] P-26.03

[illegible] P-26.04

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Airport Inn Conference Room*
2333 W. North Temple
Salt Lake City, Utah

November 14, 2007

Comment Form

Name: [illegible] **Address:**

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

[illegible]

P-26.05

P-27

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

Public Meeting: *Airport Inn Conference Room*
2333 W. North Temple
Salt Lake City, Utah

November 14, 2007

Comment Form

Name: Charles Uibel **Address:** 1266 E 500 South
SALT LAKE CITY UT
84102

Representing (optional): ☐ **Self** **Other** (please specify) _____

Comments or Concerns:

As a photographer specializing in PHOTOS of the Great SALT LAKE, (greatsaltlakephotos.com) I want to make sure that the lake remains intact for as long as Possible.

Coincidentally, the Clyman bay area is particularly dear to me. I've spent many days and hours hiking the nearby hills and photographing the lake, in all seasons and in ALL weather.

It is the best-KEPT SECRET IN THIS STATE THAT THIS AREA IS AS ~~BEUT~~ BEAUTIFUL AS ARCHES NATIONAL PARK OR THE CANYONS AND MOUNTAINS. IT IS VAST AND IT IS DELICATE- (IT CHANGES BY THE HOUR - I HAVE THE PHOTOS TO PROVE IT. WHAT WE DO HERE CANNOT BE UNDONE. PLEASE GIVE THE LAKE A CHANCE TO REMAIN INTACT FOR AS LONG AS POSSIBLE. PERHAPS TECHNOLOGY WILL SOON FIND ANOTHER WAY TO REMEDY OUR NEED FOR SOP. Thanks

P-27.01

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

RECEIVED
NOV 26 2007
BY: JG

Public Meeting: *Airport Inn Conference Room*
2333 W. North Temple
Salt Lake City, Utah

November 14, 2007

Comment Form

Name: Linda Bonar **Address:** 1820 E. 3990 South
Salt Lake City, UT 84124

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

November 19, 2007

To Whom It May Concern:

I write to express my alarm at the proposal by Great Salt Lake Minerals to expand its operations in Clyman and Bear River Bays. Great Salt Lake is a priceless area for nesting and migrating waterfowl and needs all the protection possible. Biologists and other scholars recognize the lake as necessary for the migration of birds in North and South America. Great Salt Lake's importance for birds cannot be over-stated.

It is the Division of Forestry, Fire and State Lands duty to uphold the law that clearly states that fish, wildlife habitat and aquatic beauty be protected. Further, this law states that economic development cannot supersede the law's protection.

Our world, with its limited resources, is now facing conflict over resources every day. When is enough enough? I believe that Great Salt Lake Minerals has already been granted enough terrain on which to successfully operate its business. Taking another 33,000 acres for development and profit is asking too much. The nesting and migrating birds need that lake, and your Division is required to protect it. To me, this resource conflict looks like greed versus survival for birds. Just because Great Salt Lake Minerals has a guaranteed market for more of its products does not mean that this company should automatically be granted its wishes when the impacts on bird populations would be so devastating. A greater use of the 33,000 acres is to protect the birds that use this wonderful resource and insure their shrinking habitat. P-28.01

Great Salt Lake has shrunk tremendously due to an ongoing drought. Setting aside another 33,000 acres of precious lake so that one company can make money is a bad decision. Right now, the only nesting site in Utah for White Pelicans is Gunnison Island. This island is about 2 miles from the new dikes and pumps proposed by Great Salt Lake Minerals. There used to be several more nesting sites in Utah, but one by one, they have been eliminated due to development. Shall we jeopardize this last one? I had the pleasure last December to travel to Morelia, Mexico, to see the winter habitat for monarch butterflies. It is an incredible sight to see millions of butterflies in a forest. The Mexicans found out the hard way that if you tinker with the butterflies' habitat, they will abandon the site. They installed concrete steps on the mountainside, and the butterflies left. Where will the pelicans go? P-28.02

Please do not let this unnecessary expansion jeopardize the world-famous habitat of the birds. It is an extraordinary opportunity to witness these birds in what's left of their habitat.

Sincerely,

Linda Bonar

P-29

U.S. Army Corps of Engineers Public Meeting for the Expansion of Great Salt Lake Evaporation Ponds

RECEIVED
NOV 29 2007
BY: JG

Public Meeting: *Airport Inn Conference Room*
2333 W. North Temple
Salt Lake City, Utah

November 14, 2007

Comment Form

Name: Tim Brown **Address:** 573 7th Ave
SLC, UT 84103

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I'm concerned that the surveys conducted to determine avian use of impacted areas was inadequate. In speaking with the wildlife biologist who led the surveys, I learned that 66,000 birds were spotted during the first survey, but as the water disappeared, so did the birds, resulting in mid-summer counts of No birds (Bear River area). When water returned in September, no surveys were conducted. P-29.01

Its critical that a more indepth survey be conducted. One that accounts for water fluctuations and one that considers year-round usage.

I'm also concerned that snowy plovers were found in the Clyman Bay area. As sensitive species, I fear this project will disrupt their breeding. Again, More research is needed. P-29.02

P-30

RECEIVED
NOV 16 2007
BY: JG

Attention: Jason Gipson
Concerning: Public Notice SPK-2007-00121
Great Salt Lake Mineral Corp.
November 14, 2007

Dear Mr. Gipson

I am compelled to write about the proposed destruction of 33,000 acres of the Great Salt Lake wetlands. Apparently both the western portion of Gunnison Bay and the Bear River Bay arms will be affected.

First I would like to let you know that I oppose this proposal, and see no benefit to the citizens of Utah, or the flora and fauna of this wetland habitat.

One of the first thoughts I had on this proposal is that when a contractor or developer wants to purchase and develop properties that contain designated wetland along the Wasatch Front, they have to provide Equal Acreage for the wetlands being destroyed. I didn't see a proposal stating that Great Salt Lake Mineral Corp. was going to purchase 33,000 acres to replace the wetland they are planning to destroy, and turn it over to the State for public use? If Great Salt Lake Mineral Corp. is excused from purchasing new wetlands to replace those that were destroyed, then wouldn't that set precedence for other private interests to do the same? P-30.01

I am also concerned that the citizens of Utah will have one more of their rights stripped from them, in that the Great Salt Lake belongs to all of us. If Great Salt Lake Mineral Corp. is granted the right to dyke off and destroy those proposed portions of the lake, then we, as citizens will no longer be allowed to trespass on what once belonged to us. Sure, those portions of the lake are seen by very few of us, but it's no different than saving the Utah Humpback sucker, we know it's there for future generations to enjoy. P-30.02

What about the ecosystem, could we or will we ever be able to determine the impact that dyking those portions of the lake off, might have on the lake itself, and the animals that habitat those unseen regions of the lake? P-30.03

As far as I can determine, there is no benefit to the citizens of Utah to allow this project to move forward. Great Salt Lake Mineral Corp has already been given permission to scare the lake with its dykes and evaporations ponds that now exist. Why increase the damage other than to line the pockets of the owners? P-30.04

I am sure, that the Army Corp of Engineers has taken all of the things I have mentioned into account on this issue, and as guardians for the rights of Utah citizens; I urge that you deny the proposal made by Great Salt Lake Mineral Corp.

Sincerely

J Lynn Kneedy

J Lynn Kneedy

Received: from eis-ml1rdp.eis.ds.usace.army.mil ([140.194.151.33]) by spk-ml1sac.spk.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.1830); Sun, 18 Nov 2007 18:22:12 -0800

MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="----_=_NextPart_003_01C82A52.FEC524A8"
X-MimeOLE: Produced By Microsoft Exchange V6.5
Received: from wmx2.usace.army.mil ([140.194.151.34]) by eis-ml1rdp.eis.ds.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Sun, 18 Nov 2007 18:22:11 -0800
Received: from gw1.usace.army.mil ([140.194.153.1]) by wmx2.usace.army.mil with Microsoft SMTPSVC(6.0.3790.3959); Sun, 18 Nov 2007 18:22:12 -0800
Received: from wa-out-1112.google.com ([209.85.146.176]) by gw1.usace.army.mil with ESMTP; 19 Nov 2007 02:22:11 +0000
Received: by wa-out-1112.google.com with SMTP id k40so2613309wah for <jason.a.gipson@usace.army.mil>; Sun, 18 Nov 2007 18:22:11 -0800 (PST)
Received: by 10.114.58.1 with SMTP id g1mr149023waa.1195438931033; Sun, 18 Nov 2007 18:22:11 -0800 (PST)
Received: from computer ([67.41.33.66]) by mx.google.com with ESMTPS id j29sm8637780waf.2007.11.18.18.22.09 (version=SSLv3 cipher=RC4-MD5); Sun, 18 Nov 2007 18:22:10 -0800 (PST)
Content-class: urn:content-classes:message

Subject: GSL Evaporation Pond Expansion

Date: Sun, 18 Nov 2007 18:23:41 -0800

Message-ID: <006001c82a53$34ee6530$6401a8c0@computer>
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: AcgqUv7FYg2VermJRquZraytJkKJiA==
X-Message-Flag: Follow up

From: "Justin Krajewski" <justin.krajewski@gmail.com>
To: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>

Jason Gipson, Project Manager
(public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 W. 2600 S. Ste. 150
Bountiful, UT. 84010

Dear Mr. Gipson,

Thanks for allowing me to provide my comments on thoughts about the proposed expansion of the Great Salt Lake expansion ponds. I am concerned that the proposed expansion dike will further concentrate waterfowl into an P-31.01
area already prone to botulism outbreaks. Additionally, the proposed dike will prohibit water sheeting around the mud bar which protrudes south out of the
P-31.02

Bear River Refuge. P-31.02 (Continuing)

Thousands of waterfowl, especially Northern pintails need this area as a staging area during their migration. I recently had the opportunity to hunt and boat some beautiful areas on the Bear River Refuge. In my opinion, it would be impossible to replace this portion of the ecosystem. P-31.03

I urge you to deny Mr. Milne's 404 permit application. The impacts of destroying 20% of Bear River Bay are too much for you, the COE, and our citizens to ignore.

Thank you and God Bless!

Justin W. Krajewski

326 S 12th Ave

Pocatello, ID 83201

P-32

Subject: FW: Public Notice 200700121
Date: Tue, 4 Dec 2007 08:33:25 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Public Notice 200700121
Thread-Index: AcgumHJ27cYHsF1QRQysAXnrP+5wVAH+vDkQ
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:33:28.0225 (UTC) FILETIME=[662B1110:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:33:29 -0700 (MST)
X-Spam-Status: No, score=-1.988, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_30_40,HTML_MESSAGE,SUBJ_HAS_UN

X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Steve and Jennifer Hicks [mailto:pawsnclaws@brigham.net]
Sent: Saturday, November 24, 2007 5:49 AM
To: Gipson, Jason A SPK
Subject: Public Notice 200700121

Dear Mr. Gipson:
Thank you for the opportunity to comment on the proposed expansion of the solar evaporation ponds on the Great Salt Lake. Overall I believe that this expansion is very bad for the ecosystem of the lake.

To start with, the existing ponds should have never been built in the lake. It sounds like they were built just a few years before the Clean Water Act was passed. Those ponds destroyed a large part of a very important ecosystem. Their operation continues to harm the lake by displacement of wildlife. The yearly flushing operations of the ponds also deposit highly concentrated salts into the more fresh water Bear River Bay. I have personally seen vegetation in the bay, killed by the concentrated flush waters. Their existence now, should set no precedence for an acceptable use of the Great Salt Lake. The existing evaporation ponds should be removed from the lake. P-32.01 (continues to address cumulative impact on next page) P-32.02

There are practical alternatives to building the evaporation ponds within the ordinary high water mark of the lake. There are vast open spaces to the west and north of the lake which could provide places to locate the ponds. There is also quite a bit of upland on the east side of the lake. These lands are just above the ordinary high water mark and mostly level. Yes, using these lands would pose challenges and probably a greater cost to P-32.03

the developer, but they are viable alternatives. The evaporation ponds do not have to be built in the lake.

The presentations given on Thursday evening November, 8, barely mentioned the potential impacts to migratory birds. Expansion of the evaporation ponds will have huge impacts on migratory birds. The Great Salt Lake is used by millions of waterfowl, and shore birds. This use is during migration periods as well as through the summer, for species that come here to raise their young. The ongoing BioWest aerial bird survey is taking a snapshot during a very dry period. The numbers produced by that survey will not represent bird use during more normal water levels in the bay. This survey should continue through at least one cycle of normal water levels to produce any valid information. Expansion of the evaporation ponds will cause physical displacement of the birds as well as reduce food sources available. This will cause concentration of bird populations into smaller areas, more competition for food, and probable population declines. P-32.04

Concentrating birds into ever smaller areas also increases the likelihood of major disease outbreaks. P-32.05

Expanding the evaporation ponds should be considered as an increase in the cumulative impact of this activity. The existing ponds have already destroyed a significant portion of the Great Salt Lake. Another cumulative impact to the evaporation pond expansion is the proposed removal of water from The Great Salt Lake through upstream damming. The current State Water Plan for the Bear River is to dam the river and remove 220,000 acre feet of water from the lake. This will have a significant impact on Great Salt Lake ecosystem. P-32.01 (continuing)

The Federal and State of Utah environmental agencies have noted a marked increase in mercury in birds using the Great Salt Lake. Studies should be done to determine if this increase might be due to a concentrating effect resulting from ongoing water mineral mining operations. P-32.06

Should the NEPA/404 process come to the mitigation stage, it will be interesting. I believe it will be impossible to mitigate for the wetlands lost. Even on a one to one mitigation ratio, this would require 33,000 acres of wetland to be replaced. There is simply no possible way to replace that amount of wetland anywhere in the intermountain west let alone close to the lake. Every acre of natural lake lost due to this project should be replaced, as once it becomes an evaporation pond, it loses it's value to the ecosystem. Considering that mitigation ratios are normally greater than one to one makes this an insurmountable obstacle. P-32.07

Sincerely,

Steven A. Hicks
408 E 850 N
Brigham City, UT 84302
435-723-4308
pawsnclaws@brigham.net

P-33

Subject: FW: Comments On Public Notice SPK-2007-00121
Date: Tue, 4 Dec 2007 08:33:20 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Comments On Public Notice SPK-2007-00121
Thread-Index: AcgwWaG4n+8VbGY6RCa2h46Hh1f0SAABJitQAY1JSkA=
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:33:20.0976 (UTC) FILETIME=[61D8F500:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:33:21 -0700 (MST)
X-Spam-Status: No, score=-2.269, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

-----Original Message-----
From: Gipson, Jason A SPK
Sent: Monday, November 26, 2007 11:59 AM
To: Gipson, Jason A SPK
Subject: FW: Comments On Public Notice SPK-2007-00121

From: ALAN TROUT [mailto:altrout@msn.com]
Sent: Monday, November 26, 2007 11:25 AM
To: Gipson, Jason A SPK
Subject: Comments On Public Notice SPK-2007-00121

Jason,

Attached are my comments regarding the 33,000 acre Expansion of Solar Evaporation Ponds on the Great Salt Lake.

Comments Regarding Mineral Extraction in Bear River Bay

I recently attended a public meeting held at the Ogden Nature Center presenting the proposed mineral development lease. From my 17 years of experience as manager of the Bear River Migratory Bird Refuge (now retired) I traversed the area many, many times via airboat and ATV. In addition I made aerial inspections via single engine aircraft.

An expansion of the dike network will have an extremely significant negative impact on the area for several reasons.

1) Aesthetics: Although already impacted by diking, Bear River Bay remains as the Great Salt Lakes (GSL) most significant remaining bay. It provides scenery not duplicated anywhere in North America. P-33.01

2) Recreation: Bear River Bay and the adjacent Willard Spur are frequented by airboat users during various seasons due to the seclusion, aesthetics and wildlife viewing. During the waterfowl hunt (October - January), the area is extremely popular because it offers some of the Nations best hunting in unspoiled surroundings. P-33.02

3) Wildlife: Perhaps the most impact will occur to the world famous diversity of migratory birds. The most productive section of GSL is Bear River Bay. Within the foot print of the existing evaporation ponds, use by waterfowl and various species of water dependant birds has been nearly eliminated. Expansion of the ponds will do more of the same. The location of the proposed expansion is particularly harmful because it overlays a portion of the Bear River Bay which has higher wildlife use when water levels are lower than average in the GSL In those years, this area becomes even more important to migratory birds. In carrying out my job duties, I observed migratory by the multiple hundreds-of-thousands utilizing the Western part of Bear River Bay. P-33.03

Al Trout
2670 North 750 East
Ogden, UT 84414
(801)782-5604

DUCKS UNLIMITED

WESTERN REGIONAL OFFICE
3074 Gold Canal Drive
Rancho Cordova, CA 95670-6166
916-852-2000 916-852-2200 (fax)
www.Ducks.org

P-34

November 20, 2007

RECEIVED
NOV 26 2007
JG

Mr. Jason Gipson
Project Manager
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

RE: Comments on Public Notice SPK-2007-00121

Dear Mr. Gipson:

Ducks Unlimited has followed the development of the Great Salt Lake Minerals Corporation's proposal to dike nearly 33,000 acres of state land within the Great Salt Lake for mineral extraction purposes and we have several concerns regarding upcoming environmental review of this project. In particular, we are aware of only minimal review of the potential environmental impacts that this proposed project will have on wetland habitats associated with the Great Salt Lake. We believe more extensive investigation is warranted. We offer the following information for your consideration.

The Great Salt Lake is one of the most important areas for migratory waterfowl and other waterbirds in North America. In particular, the wetlands in Bear River Bay's Willard Spur support millions of waterfowl during fall migration. This valuable area is close to 8,000 acres of lake bed proposed for diking and alteration. We are concerned that these new dikes will remove existing high quality lake bed waterfowl habitat, negatively affect productive wetlands within the adjacent Willard Spur area, and consequently have far reaching effects on waterfowl and other waterbird populations throughout the Pacific Flyway and North America. P-34.01

We are specifically concerned about how the proposed project will affect surface hydrologic patterns (*e.g.*, water depths, inputs, outputs, flow patterns, etc.), surface water salinities, vegetation communities, and ultimately waterfowl and other waterbird use.

Wetlands in Bear River Bay, and specifically within the Willard Spur area, are dependent on a hydrologic pattern that provides shallow flooded areas with water depths, timing, and salinities supporting extensive sago pondweed (*Stuckenia spp.*) and alkali bulrush habitats. This area supports some of the largest concentrations of migrating waterfowl in the Pacific Flyway. The Great Salt Lake, and the Willard Spur in particular, plays an important role in supporting nearly 25% of the North American population of northern pintail during the summer molt and the spring and fall migrations. Northern pintail are listed in the North American Waterfowl Management Plan as a High Priority Species. Their population has declined by 70% from 1950. P-34.02

The Great Salt Lake, and the Willard Spur in particular, is essential in supporting millions of the continent's migratory waterfowl, particularly northern pintails. We urge you to

take this information into consideration during your environmental review of the proposed Great Salt Lake Minerals Corporation's proposed diking project. Alteration of the area's hydrology from the diking project could have far reaching effects on habitat quality and quantity within the Willard Spur, and negative effects on sensitive waterfowl and waterbird populations. P-34.02 (Continuing)

Ducks Unlimited has conducted a habitat evaluation of the wetlands of the Great Salt Lake, including those in the Willard Spur. Our initial results show that the Willard Spur contains some of the most productive waterfowl foraging habitat on the continent. We are currently in the process of integrating this data into a habitat energetics model to determine the waterfowl carrying capacity and specific habitat values of the Willard Spur and other Great Salt Lake wetland areas. This final modeling will be completed soon. P-34.03

We will send our research and analysis to you as soon as it has been completed and reviewed. We urge you to consider this information in your evaluation. In addition, we hope you will call on DU biologists to provide additional evaluation or review of your work to ensure you have fully considered potential impacts of the dikes on waterfowl and critical habitats in Great Salt Lake wetland areas.

Ducks Unlimited is a nonprofit waterfowl and wetland habitat conservation organization with over one million members, supporters, and volunteers in the United States. The mission of Ducks Unlimited is to conserve, restore, and manage wetlands and associated habitats for North America's waterfowl, other wildlife and the people who enjoy and value them.

Thank you.

Sincerely,

Rudolph A. Rosen, Ph.D.
Director

P-35

Subject: FW: G.S.L. proposal
To: "S. Blaise Chanson" <bchanson@bio-west.com>

"urn:schemas-microsoft-com:office:office" xmlns:w = "urn:schemas-microsoft-com:office:word" xmlns:st1 = "urn:schemas-microsoft-com:office:smarttags">

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Brandon Rodgers [mailto:jernbran@comcast.net]
Sent: Wednesday, November 28, 2007 11:31 PM
To: Gipson, Jason A SPK
Subject: G.S.L. proposal

Hi Jason,

I am writing this e-mail to you to express my concern about the G.S.L. expansion proposal. This seems to be just another example of state sponsored corporate America and a complete disregard for the environment. P-35.01

Thanks,
Brandon Rodgers

P-36

Subject: FW: Public Notice SPK-2007-00121-GSL expansion
To: "S. Blaise Chanson" <bchanson@bio-west.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: dewsnupd@wellsfargo.com [mailto:dewsnupd@wellsfargo.com]
Sent: Wednesday, November 28, 2007 1:24 PM
To: Gipson, Jason A SPK
Cc: john.manookin@wellsfargo.com
Subject: Public Notice SPK-2007-00121-GSL expansion

Hello Jason,

Thanks for being willing to hear out the public on the expanse plans of GSL mineral. I have spent a great deal of time on the water that is proposed to be diked off over the years and am very alarmed and concerned of the prospects of being shut out of this area. The wildlife habitat and beauty of this area is unrivaled and should be protected from mineral extraction. I am concerned that the wildlife we have observed and interacted with, including waterfowl of all species, will be negatively impacted by this project. My family has airboated the area in question on dozens of occasions and look forward to doing so for many years to come. P-36.01

I am concerned that the project will have irreversible effects on the lake, and that the long term consequences cannot be foreseen. P-36.02

Please mark my voice as opposing the expansion in coming years.

Regards,

Darin S. Dewsnup

Senior Vice President-Investments

Senior Financial Consultant

Wells Fargo Investments

Private Client Services

299 South Main, 7th Floor

Salt Lake City, Utah 84111

801-246-1164/801-246-1374

dewsnupd@wellsfargo.com

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P-37

Subject: FW: GREAT SALT LAKE MINERALS EXPANSION
Date: Tue, 4 Dec 2007 08:33:05 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GREAT SALT LAKE MINERALS EXPANSION
Thread-Index: AcgyEruK9vuhyoxkTl+o7sVoKxozUAEgJutQ
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:33:10.0663 (UTC) FILETIME=[5BB35170:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:33:11 -0700 (MST)
X-Spam-Status: No, score=-1.531, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_40_50,HTML_MESSAGE,SUBJ_ALL_CAI

X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: j.kinghorn@comcast.net [mailto:j.kinghorn@comcast.net]
Sent: Wednesday, November 28, 2007 4:02 PM
To: Gipson, Jason A SPK
Subject: GREAT SALT LAKE MINERALS EXPANSION

Jason,

I'm writing this letter to express my deep disatisfaction of G.S.L. expansion into our wetlands, not just as an avid waterfowl hunter but also as a conservationist. What benefit does this P-37.01
project have for anybody besides G.S.L.? All this is going to do is take away precious land from the wildlife, and screw up the eco system even more than it already is. I would also would like to know what kind of impact this project is going to have on the surrounding P-37.02
wetlands 20 - 50 years down the road, migrating birds are already suffering from high mercury levels as it is. This does not benefit anyone except big buisness!!! I personally could care less if G.S.L needs to expand, but I do care about the land thats going to be ruined and the effects it will have on our wildlife. Is it really worth destroying the land so we can keep our roads salted and our hamburgers better? Once this land is gone we can 't get it back. I urge you, please stop this project, so that other generations of people can enjoy this precious land. Thank you for your time.

Sincerely,

Justin Kinghorn

P-38

Subject: FW: GSL expansion project
Date: Tue, 4 Dec 2007 08:32:58 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL expansion project
Thread-Index: AcgyN3cIXS2iyhz5S+2RBA9eNfJykQEW90BQ
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:33:04.0960 (UTC) FILETIME=[584D1C00:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:33:05 -0700 (MST)
X-Spam-Status: No, score=-2.031, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_40_50,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Todd Bangerter [mailto:tbangduck@hotmail.com]
Sent: Wednesday, November 28, 2007 8:25 PM
To: Gipson, Jason A SPK
Subject: GSL expansion project

Mr Gipson,
I am a wildlife conservationist concerned about the 33,000 acre GSL expansion project particulary in the bear river bay of the Great Salt Lake. I feel stongly that this project will impact wildfe in an extremly negative way!
I feel that it will effect migratory birds that use the area as a major resting stop, on their long migration south. The northern pintail duck is a prime example of wildlife that is in danger of being affected by this project. They use this area to rest and feed. The tundra swan uses the area and gathers by the thousands to regenerate there bodies on their southern migration. These and many more species of wildlife would be affected in a terrible way. P-38.01
There is enough fresh water in the area that attracts the wildlife. Impounding the water and making evaporation pools would take that vital fresh water away. And you just can't replace fresh water!
So please know that this is a terrible plan and should be stopped and should go no further! Please consider the few points i have made on the negative imact of wildlife this project will have.

Sincerley,
Todd Bangerter

Boo! Scare away worms, viruses and so much more! Try Windows Live OneCare! Try now!

P-39

Subject: FW: Expansion of GSL Mineral
To: "S. Blaise Chanson" <bchanson@bio-west.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

-----Original Message-----
From: john.manookin@wellsfargo.com [mailto:john.manookin@wellsfargo.com]
Sent: Thursday, November 29, 2007 8:17 AM
To: Gipson, Jason A SPK
Subject: Expansion of GSL Mineral

Dear Jason,

I appreciate your being willing to hear from the public on the expansion plans of GSL Mineral.

Having spend many hours exploring and enjoying the vast beauty and solitude of the GSL and its' associated wildlife, I am concerned that the expansion will continue to create an ecological disaster. For many years the GSL has been used as a dumping ground and utilized for many commercial ventures at the expense of the ecology and reduced and contaminated habitat for the abundant wildlife. P-39.01

I am concerned that continued blatant destruction of the remaining portions of the GSL will forever destroy what little we have left.

Please mark me down as opposing the expansion and let's leave the GSL as it is and not disrupt the delicate balance that serves the public as a wildlife habitat and the enjoyment of what remains of a true Utah treasure.

Thanks again for your concern.

John Manookin
1400 Kearns Blvd. Suite 201
Park City, Utah 84060
435-655-4072 Phone
435-655-4077 Fax
mailto:john.manookin@wellsfargo.com

This message may contain confidential and/or privileged information. If you are not the addressee or authorized to receive this for the addressee, you must not use, copy, disclose, or take any action based on this message or any information herein. If you have received this message in error, please advise the sender immediately by reply e-mail and delete this message. Thank you for your cooperation.

P-40

Subject: FW: Public Notice SPK-2007-00121
Date: Tue, 4 Dec 2007 08:32:36 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Public Notice SPK-2007-00121
Thread-Index: AcgzIi9Bt59Ao0cHRz+6r94lxIXMfgDcRbEw
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:32:37.0414 (UTC) FILETIME=[47E1EC60:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:32:38 -0700 (MST)
X-Spam-Status: No, score=-1.06, required=5
X-Spam-Checks:
AWL,BAYES_00,DEAR_SOMETHING,DNS_FROM_RFC_ABUSE,HTML_30_40,HTML_MESS

X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Sumner [mailto:sumguy2826@comcast.net]
Sent: Thursday, November 29, 2007 7:49 PM
To: Gipson, Jason A SPK
Subject: Public Notice SPK-2007-00121

Dear sir:

This is a bad idea to let them increase their corporate foot hold in that area. I have hunted that area since 1979 in my airboat and I can tell you that the air quality at times was terrible no matter what they say. It was nice of the state of Utah to put in a air quality checking station over on 12th street after every home owner in the area complained years ago. I haven't P-40.01

smelled the nose burning fumes since then. As for the expansion area for their ponds, I have seen gizzard shad out there in the water and seagulls, fish ducks, Blue Herron feasting on them. They have come out of Willard Bay and with the carp added a valuable food source for the various birds in that area. This will all end if they are allowed to put ponds in that area. P-40.02

"What is of concern is the reduction in habitat and also the potential decrease in available wet areas, particularly in lower water years". My family and I absolutely agree with this statement. This area cannot be made smaller because the predators will have a field day devouring the birds in a smaller area. Corporate profits should not out weigh the destruction of this valuable wetland ecosystem. Thank you for this opportunity to oppose this action. P-40.03

William C. Sumner
826 Tyler Circle
Ogden, Ut 84404

P-41

Subject: FW: Public Notice SPK-2007-00121 - GLS Evaporation Pond Expansion
Date: Tue, 4 Dec 2007 08:32:29 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Public Notice SPK-2007-00121 - GLS Evaporation Pond Expansion
Thread-Index: Acgz1hUzKrnd7ykGQheAqnN9kNLJYwCvSqBw
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:32:30.0148 (UTC) FILETIME=[438D3840:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:32:31 -0700 (MST)
X-Spam-Status: No, score=-2.229, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_50_60,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: jeff farr [mailto:jeff@jefffarr.com]
Sent: Friday, November 30, 2007 9:53 PM
To: Gipson, Jason A SPK
Subject: Public Notice SPK-2007-00121 - GLS Evaporation Pond Expansion

Jason -

Thanks for giving the public the opportunity to provide feedback on this project.

I am not in support of the project. The Willard Spur and Bear River Bay make up a unique area the many species of waterfowl and shore birds utilize. I do not think enough has been done to really understand the impact on this area if the additional dikes and evaporation ponds are created. It is unclear the impact this will have on water depths, water salinity, plant life and the birds and other animals that utilize that area. There is no way to replace this resource if it is taken. P-41.01

Again, I do not support this expansion project. I hope the COE will consider the impact on a irreplaceable resource and deny the expansion.

Thanks again for the opportunity to express my concern.

Jeff Farr
435-723-7020

P-42

November 27, 2007

RECEIVED
NOV 3 0 2007
BY:

Jason Gipson, Project Manager
US Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Subject: Public Notice SPK-2007-00121

Gentlemen:

I am concerned about the location of the proposed evaporation ponds in the Bear River Bay area. Approximately 8,000 acres of the total 33,000 acres of proposed evaporation ponds expansions would not be located in the salt water areas of the Great Salt Lake but rather would destroy and create permanent, irretrievable loss of the historical periodic freshwater delta area of the Bear River.

It is my understanding that the brine water source for the eastern pond expansion would be transported from the west side of the Great Salt Lake. An alternative to this long distance conveyance would be to evaporate the brine locally on the west side with larger pond areas on that side and recover the minerals there or reduce the amount of concentrated brine to a point that it can be transported to the east side with reduced or possibly total elimination of the need to expand the east side area. The environmental value of the west side lands are a fraction of the value on the east side. Another alternative that should be studied is to expand the existing east evaporation ponds southward into the saline areas of the Great Salt Lake and not affect the relatively fresher Bear River Bay. P-42.01

I am a hunter and would be directly and adversely affected by loss of huntable area if the east side ponds are constructed in the area proposed. The area is accessible by airboat and provides hunting opportunities that would be adversely affected. Although the GSL sometimes rises and inundates the entire area, there are long period of years when the Bear River Bay is comprised of seasonal freshwater flow from the local rivers, streams, artesian flows and rising fresh groundwater inflow that provide valuable food, cover and resting areas for the waterfowl and other wildlife. The impacts to wildlife would be significant. P-42.02 P-42.03

I do not see why an entity would propose to irretrievably destroy 8,000 acres of seasonal freshwater wildlife habitat when there is a permanent saline area immediately adjacent to the south that would fully fulfill the project need. The location of the proposed east side evaporation area expansion needs to be relocated to the nearby south side of the causeway. The project as proposed would need to include mitigation and replacement of a minimum of 8,000 acres of freshwater wetlands. The cost of mitigation for the loss of the Bear River Bay lands would surely make either of the alternatives identified above more feasible and less costly than the plan as currently proposed. P-42.01

The Corps of Engineers is charged with protecting the wetlands of the United States and seeing that they are not dredged, filled and destroyed on such a massive scale. There is a reasonable alternative to locating expansion ponds in the Bear River Bay area and I trust that through the EIS process a more reasonable alternative will be developed that prevents the loss of the Bear River Bay wetlands.

The lands belong to the State of Utah and there should be an enforceable requirement that the Bear River Bay area be restored and returned to its pre-existing condition and usefulness. How will a commitment be included for restoration so that the State does not get short term revenue for a use that precludes the State from getting any further future revenue or use for the area if the project is discontinued or abandoned at some future date? P-42.04

I appreciate the opportunity to comment on this project and would like to receive a copy of the draft EIS when it is available and want to be included on the mailing list for all future information on this project.

Sincerely,

Mark Breitenbach

Mark Breitenbach
5958 Bull Moose

P-43

Subject: FW: GSL Evaporation Pond Expansion
Date: Tue, 4 Dec 2007 08:32:21 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: Acg0Q/LYiPQPz5MkTQ6sFa3YCNzMNgCT0oQg
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:32:22.0039 (UTC) FILETIME=[3EB7E270:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:32:23 -0700 (MST)
X-Spam-Status: No, score=-2.228, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_50_60,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: KMALASKA@aol.com [mailto:KMALASKA@aol.com]
Sent: Saturday, December 01, 2007 10:53 AM
To: Gipson, Jason A SPK
Subject: GSL Evaporation Pond Expansion

Dear Jason,

I am writing in concern of the new proposed diking in the Bear River Bay. I visited the area yesterday 11-30-07 and as I have found in years past at this time of year the area was full of transient water foul. This area this time of year is condusive for water fowl resting. Because of the depth of the fresh water and its location this is an ideal place for migrant birds to rest feed and have access to fresh water. Greenwing Teal, Mallard, Pintail, North American Widgeon, Gadwall, and Canadian geese were all present. P-43.01

I am sure you have heard every reason possible from folks like me why not to approve this project. It has to be obvious that our natural resources are dwindling. I am all for growth and increased opportunities for employment, but this is not a productive trade off for our birds and this important ecosystem.

Good luck with your study and decision on this issue.

Kevin Malaska

Check out AOL Money & Finance's list of the hottest products and top money wasters of 2007.

P-44

Subject: FW: Solar Evaporation Ponds Project
Date: Tue, 4 Dec 2007 08:32:08 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Solar Evaporation Ponds Project
Thread-Index: Acg0eCmxEHrR8OfATiyvYWWE4XaihACGwrhQ
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:32:10.0008 (UTC) FILETIME=[378C1980:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:32:10 -0700 (MST)
X-Spam-Status: No, score=-2.294, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

-----Original Message-----
From: Laura Nicole Lesar [mailto:llesar@ucsc.edu]
Sent: Saturday, December 01, 2007 5:13 PM
To: Gipson, Jason A SPK
Subject: Solar Evaporation Ponds Project

Hello Jason,

My name is Laura Lesar and I am an environmental studies major at University of California, Santa Cruz.
Originally from Park City, and am interested in the Great Salt Lake Solar Evaporation Ponds Expansion Project. I read the published public notice, but still had a few questions regarding some aspects of the project.

I realize you are creating more solar evaporation ponds, however I feel it is unclear as to where the water is being obtained that will fill the ponds. Do you plan to import water for the ponds from a local aquifer or treatment plant? Or are you simply using water from the Great Salt Lake itself?

Also, is there any opposition to the project, and if so, what is their main concern?

I am unsure of the motivation behind such a project.
Will the project prove less costly to localize raw potassium production, or is this simply being created for convenience?

Also, I am unsure as to how potassium is generated from the evaporation ponds. Is water simply evaporated and the minerals left behind are potassium and other valuable minerals? Also, are the pump stations used to pump water to the evaporative ponds, or do they transport the minerals? If you could

send me a breakdown of how the system works, that would be highly beneficial to increase my understanding and implications of the project as a whole.

The public notice states that there is no adverse effects to endangered species or essential fish habitat. However, the proposed project seems as it would eliminate habitat as a result of pond construction. Is the project expected to effect the ecosystem as a whole? Also, how big is each evaporative pond? P-44.01

I am writing an analysis for a Freshwater Policy class and I am utilizing this project as a case study. If you could get back to me as soon as possible I would greatly appreciate it. Thanks so much, and I hope to hear from you soon.

Laura Lesar
Environmental Studies
University of California, Santa Cruz

Subject: FW: GSL Evaporation Pond Expansion
Date: Tue, 4 Dec 2007 08:03:49 -0800
X-MS-Has-Attach: yes
X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: Acg2BpcI38e6SJSTT5WIVa6N1V6FyAAiKhRQ
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>
X-OriginalArrivalTime: 04 Dec 2007 16:03:50.0778 (UTC) FILETIME=[42BA2DA0:01C8368F]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:04:05 -0700 (MST)
X-Spam-Status: No, score=-2.29, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Jeff Pace [mailto:onewebfoot@msn.com]
Sent: Monday, December 03, 2007 4:46 PM
To: Gipson, Jason A SPK
Subject: GSL Evaporation Pond Expansion

P-45

I am in favor of no build
All of the information in my attachment are the reasons
If you continue to take away the lake there will be nothing left of it
Jeff Pace
4853 Cherrywood Lane
West Valley City Utah 84120-5775

P-45.01

final draft army corp scoping 11-30-07 incorporating comment2.doc

NOTE FOR SCOPING REPORT: The attachment is a draft of a letter subsequently received on December 3, 2007 from Joro Walker, Western Resource Advocates (P-48).

Subject: FW: GSL Evaporation Pond Expansion
Date: Tue, 4 Dec 2007 08:03:15 -0800
X-MS-Has-Attach: yes
X-MS-TNEF-Correlator:
Thread-Topic: GSL Evaporation Pond Expansion
Thread-Index: Acg2B1FVc1whQF5nSvmOkaU5jJjZBAAh9hyw
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>
X-OriginalArrivalTime: 04 Dec 2007 16:03:16.0325 (UTC) FILETIME=[2E311150:01C8368F]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:03:21 -0700 (MST)
X-Spam-Status: No, score=-2.285, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Jeff Pace [mailto:onewebfoot@msn.com]
Sent: Monday, December 03, 2007 4:51 PM
To: Gipson, Jason A SPK
Subject: GSL Evaporation Pond Expansion

P-46

You can't continue to take away the wetlands and keep the ecosystem going
I am in favor of not expanding

P-46.01

Vernona Pace
4853 Cherrywood Lane
West Valley City Utah 84120-5775

final draft army corp scoping 11-30-07 incorporating comment.doc

NOTE FOR SCOPING REPORT: The attachment is a draft of a letter subsequently received on December 3, 2007 from Joro Walker, Western Resource Advocates (P-48).

Subject: FW: GSL Evaporation Pond Expansion
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Jeff Pace [mailto:onewebfoot@msn.com]
Sent: Monday, December 03, 2007 4:48 PM
To: Gipson, Jason A SPK
Subject: GSL Evaporation Pond Expansion

P-47

I am in favor of not building or expanding
use common sense you can't continue to take away form the ecosystem
You cannot replace Wetlands

P-47.01

Lynn Pace
4853 Cherrywood Lane
West Valley City Utah 84120-5775

final draft army corp scoping 11-30-07 incorporating comment1.doc

NOTE FOR SCOPING REPORT: The attachment is a draft of a letter subsequently received on December 3, 2007 from Joro Walker, Western Resource Advocates (P-48).

WESTERN RESOURCE
ADVOCATES

Protecting the Interior West's Land, Air, and Water

December 3, 2007

Jason Gipson, Project Management
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010
jason.a.gipson@usace.army.mil
VIA Email and U.S. Mail

Re: Public Comments Relative to Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Evaporation Ponds on Great Salt Lake

Dear Jason,

Thank you for the opportunity to provide the U.S Army Corps of Engineers (Army Corps) with preliminary comments relative to Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Evaporation Ponds on Great Salt Lake (GSL Minerals Proposal). I make these comments on behalf of FRIENDS of Great Salt Lake, National Audubon, League of Women Voters of Salt Lake, League of Women Voters of Utah, Wasatch Audubon, Utah Rivers Council, Utah Chapter of the Sierra Club, Utah Waterfowl Association, Utah Airboat Association and Bryan Dixon (collectively "FRIENDS"). We hope that you will gather the data necessary to carefully consider the following issues and concerns as you under take your statutory and regulatory obligations in reviewing the GSL Minerals Proposal.

I. Introduction

As you know, local, national and international value of Great Salt Lake, its islands, and its wetlands cannot be overstated. Overall, 257 avian species use the Great Salt Lake ecosystem. Of these, 112 species are exclusively associated with the lake's varied wetland areas, while 117 species reportedly nest on the lake's periphery or on its islands. At least 33 species of shorebirds representing 2 to 5 million individuals use Great Salt Lake annually, stopping along routes that take them elsewhere in North, Central or South America. In addition, up to 5 million waterfowl migrate through the lake each year.

Colorado Office • 2260 Baseline Road, Suite 200 • Boulder, CO 80302 • 303-444-1188 • Fax: 303-786-8054 • E-mail: info@westernresources.org
Utah Office • 425 East 100 South • Salt Lake City, UT 84111 • 801-487-9911 • Fax: 801-486-4233 • E-mail: utah@westernresources.org
Nevada Office • 769 Basque Way, Suite 300 • Carson City, NV 89706 • 775-841-2400 • Fax: 866-223-8365

www.westernresourceadvocates.org

Approximately 30 percent of the waterfowl migrating along the Pacific Flyway depend upon the Great Salt Lake wetlands. For these migrants, the lake provides a critical food supply, allowing them to restore depleted energy reserves and fuel up for the rest of their migrations, sometimes doubling their body weight before they leave. In recognition of its role in these international flights, Great Salt Lake is designated as **one of only eight** sites with a "hemispheric" designation – as opposed to regional or international designation – of the 40 Western Hemisphere Shorebird Reserve Network sites in the United States.

The importance of Great Salt Lake to the birds of the Americas is borne out by the sheer numbers that depend on its resources, including

- 60 to 80 percent of the world's population of Wilson's phalaropes,
- One of the two largest staging concentrations of eared grebes in North America,
- The world's largest breeding population of white-faced ibis and California gulls,
- Over half of the entire breeding population of snowy plovers west of the Rocky Mountains,
- More than three quarters of the entire western population of tundra swan,
- One of the three largest breeding colonies of American white pelicans, and
- One of the ten largest wintering populations of bald eagle in the lower 48 states.

Not surprisingly, hundreds of thousands of bird watchers comb the shores of Great Salt Lake to be rewarded by incredible views of feeding, flying and nesting birds that journey thousands of miles to gorge on the bounty of our nation's largest inland "sea." The lake also attracts recreationists enjoying other water-based activities such as sailing, boating, rowing, floating, wading and kayaking. Others hike, ride horseback and mountain bike to enjoy scenery, solitude and wildlife. Great Salt Lake also supports a robust community of waterfowl enthusiasts who not only enjoy hunting but are working to preserve and protect Utah's waterfowl, its unique and rich habitat and its rich heritage.

The North Arm of Great Salt Lake, where the majority of the proposed expansion is planned, is an area of particular significance to the lake's ecosystem. Commenting specifically on the GSL Minerals Proposal, the Utah Division of Wildlife Resources (DWR) and the U.S. Fish and Wildlife Service (FWS) noted that the North Arm of Great Salt Lake becomes critical to migratory and other waterbirds during high water years. Exhibits 2 & 3, attached. This is because, during these times, the salinity in the North Arm best supports brine shrimp – an important food source for many of the lake's birds. See DWR Comments at 2-3 (documenting the crucial importance of the North Arm to wildlife during the 1980s and early 1990s); July 19, 2007 Letter from Don Paul to Mr. Styler and Mr. Buehler at 2, Exhibit 7, attached ("During periods when the GSL elevation occurs between 4193' and 4206' above sea level (asl), there are several aquatic bird species that occur at the lake in continental and hemispheric numbers of importance at the GSL and largely in the Gilbert Bay. These are the Wilson's Phalarope, Red-necked Phalarope, and the Eared Grebe. Some years these populations are in excess of 1,200,000, and 1,300,000 respectively during their seasonal occurrence at the GSL. At times these P-48.01

numbers of Wilson's Phalaropes and Eared Grebes represent 50 to 70% of the population that occur in the world.");[1] Great Salt Lake Mineral Leasing Plan at 33 ("[D]uring the high water years from 1983 to 1987, there were increase populations of brine shrimp in the north arm as salinity decreased [and] . . . eared grebes followed the brine shrimp into the north arm, abandoning sites along the Antelope Island causeway . . ."). P-48.01 (Continuing)

As recognized by the Utah Legislature, the North Arm is of significant importance as a refuge for one of the last remaining populations of the American white pelican, which breeds on Gunnison Island.[2] In addition, the North Arm offers outstanding recreational opportunities. This unique and remote area is enjoyed for its stark beauty, wildlife and bird life and stunning landscapes. That this area is more difficult to access and less frequented than the South Arm does not diminish its significant recreational and aesthetic value. Moreover, although navigation to and from this area is currently impeded by the causeway, there is no reason to believe that this obstruction is permanent[3] and every reason to believe that the demand for access to this area will increase. P-48.02 P-48.03

Likewise, Bear River Bay and the Willard Spur are of outstanding value for both recreation and wildlife habitat. Here there is a fishery that persists when the lake elevation is higher than 4,200 feet above sea level of vital importance to pisciverus birds. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake. P-48.04 P-48.05

Recognizing these values, DWR has underscored the tremendous ecological importance of the lease parcels the applicant proposes to develop:

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[1] Mr. Paul also states: "This was the case in the high lake years of the 1980s (1983 to 1988). The migratory populations of Phalaropes and Eared Grebes were totally reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations which sometimes exceed 2,000 miles. Much of the foraging of these species took place along the west shorelines of promontory point, around Gunnison Island and west toward the Hogup Mountains (the ostensible GSL Minerals diking and ponding site), (DWR SLO files). Id.

[2] Utah Code Ann. § 23-21a-2 ("The legislature of the state of Utah recognizes that the number of breeding sites of the American white pelican has been reduced from in excess of 50 prior to 1932 to only seven major sites in 1976 as a result of the removal of water barriers around breeding sites, loss of food supply, and **human disturbance of nesting colonies.** The legislature of the state of Utah further recognizes that Gunnison Island in the Great Salt Lake, one of the seven remaining pelican rookeries in North America, produces over 20% of the world's population of the American white pelican, and is the only remaining major pelican rookery that does not have refuge status. It is hereby declared to be the policy of the state of Utah that areas that will support certain threatened life forms shall be preserved for their benefit and for the benefit and enjoyment of present and future generations of people.") (emphasis added)

[3] The causeway has stood only since 1959, when it replaced a trestle built in 1902.

P-48.05
(Continuing)

> These lands . . . are valued by DWR for periods when lake level falls below 4200' in Bear River Bay. DWR is particularly interested in lands which are north and northwest of the existing dikes . . . because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural lake within the bay.

IMC Kalium/DWR Memo, August 28, 1998 at 3, Exhibit 8. Moreover, this area of the lake receives high levels of recreational use, is appreciated for its scenic beauty by many, and is critical to navigation of the lake. Bear River Bay and Willard Spur enjoys a high number of days of recreational use. Air boat operators and others access this area though a public access site and two guiding services also operate in the area. There are at least two private duck clubs that are located along the shore of this area.

II. The Great Salt Lake Minerals Proposal

Currently, Great Salt Lake Minerals operates 43,000 acres of solar evaporation ponds on Great Salt Lake. According to the company, this includes 21,000 acres of salt ponds in Clyman Bay on the west side of the lake, a 21 mile long canal running along lake bottom from west to the east side of Great Salt Lake, and 22,000 acres of solar ponds in Bear River Bay on the east side of the lake.

To this existing 43,000 acre facility, Great Salt Lake Minerals plans to add significant additional facilities. On the west side, in Clyman Bay, the company proposes to build an additional 18,000 acre solar pond, and a new 7,000 acre pond, as well as a new feed canal into the lake and a new pump station powered by a diesel engine. The company maintains that it currently leases much of the land necessary to build this 7,000 acre pond and what it does not lease is presently leased by a private individual. On the east side of the lake, in Bear River Bay, the company intends to build a new 8,000 acre solar pond. Great Salt Lake Minerals contends that it currently holds leases sufficient to construct this 8,000 acre pond in Bear River Bay.

In sum, Great Salt Lake Minerals seeks to expand its 43,000 acre operation by 25,000 acres[4] on the west side and 8,000 acres on the east side, for a total expansion of 33,000 acres, bringing the size of its operations to 76,000 acres or 119 square miles. This means that Great Salt Lake Minerals will have under development an area larger than Salt Lake City, which is 110 square miles – an area that takes up 13 percent of the total area of the lake when waters are low, and covers 7.4 percent of the lake when its levels are average.[5] Because the existing and proposed development is concentrated in the North Arm of the lake and in Bear River Bay, as well as in shallow water and along the shoreline, the

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[4] According to Great Salt Lake Minerals, the total proposed expansion for the west side of the lake will cover 25,000 acres. However, 1,500 acres that is slated to be used for this development is already leased to a private entity. As a result, Great Salt Lake Minerals is nominating 23,088 additional acres for leasing in this area.

[5] See http://geology.utah.gov/utahgeo/gsl/index.htm, the website of the Utah Geological Survey, for area calculations based on elevation of the lake.

impacts of the mining operations will be felt even more acutely in these parts of the lake and in these types of ecosystems.

III. Legal Framework

A. The Clean Water Act

Section 404 of the Clean Water Act, 33 U.S.C. § 1344, prohibits the filling or dredging of waters of the United States without first receiving a § 404(b) permit from the Army Corps. 33 U.S.C. § 1344(a), (d). A permit may not be issued if (i) there is a practicable alternative which would have less adverse impact and does not have other significant adverse environmental consequences, (ii) the discharge will result in significant degradation, (iii) the discharge does not include all appropriate and practicable measures to minimize potential harm, **or** (iv) there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Army Corps guidelines for permit issuance. 40 C.F.R. § 230.12(a)(3)(i-iv).

For non-water dependent projects, it is presumed that a practicable alternative exists and the burden to clearly demonstrate otherwise is on the applicant. Id. § 230.10(a)(3); Resource Inv's, Inc. v. United States Army Corps of Eng'rs, 151 F.3d 1162, 1167 (9th Cir.1998). "Practicable" is defined at 40 C.F.R. § 230.10(a)(2) as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." The presumption for a non-water dependent project that a practicable alternative exists requires that an applicant make a persuasive showing concerning the lack of alternatives. Sylvester v. United States Army Corps of Eng'rs, 882 F.2d 407, 409 (9th Cir.1989) (internal citation omitted). Finally, a permit may not be issued "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." 40 C.F.R. § 230.10(d). P-48.06

B. NEPA

The National Environmental Policy Act (NEPA) requires federal agencies to prepare an EIS prior to taking major federal action. 42 U.S.C. §§ 4321-4370d. The Army Corps's issuance of an individual 404 permit is a major federal action. The purpose of NEPA is to require agencies to consider environmentally significant aspects of a proposed action, and, in so doing, let the public know that the agency's decisionmaking process includes environmental concerns. The administrative record must demonstrate that the agency in question follows NEPA procedure, which requires a "hard look" at the environmental consequences of the proposed action. P-48.07

NEPA requires analysis of the purpose and need for the proposed project, 40 C.F.R. § 1502.13, along with a full and fair analysis of all reasonable project alternatives. 42 U.S.C. § 4332(2)(C)(iii), (E); 40 C.F.R. § 1502.1. In fact, the regulations implementing NEPA refer to the comparison of alternatives as the "heart of the environmental impact statement." 40 C.F.R. § 1502.14. Agencies must "rigorously explore and objectively evaluate all reasonable alternatives," then "[d]evote substantial treatment to each P-48.08

alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits," and explain why other alternatives were eliminated from detailed consideration. Id.

C. NHPA

P-48.09
(this entire section)

Congress enacted the National Historic Preservation Act (NHPA) in 1966 because it found that "historic properties significant to the Nation's heritage are being lost or substantially altered, often inadvertently, with increasing frequency[.]" 16 U.S.C. § 470(b)(3); see National Mining Association v. Slater, 167 F.Supp.2d 265, 271 (D.D.C. 2001) (reversed on other grounds National Mining Association v. Fowler, 324 F.3d 752 (D.C.Cir. 2003)). As discussed below, the shores of Great Salt Lake are rich in prehistoric archeological sites. To serve the public interest in "the preservation of this irreplaceable heritage," Congress declared as the goal of the Act, the maintenance and enrichment of this "vital legacy" for future generations of Americans. 16 U.S.C. § 470(b)(4); see Southern Utah Wilderness Alliance v . Norton, 326 F.Supp.2d 102, 108 (D.D.C. 2004).

NHPA accomplishes its purposes by "requir[ing] each federal agency to take responsibility for the impact that its activities may have upon historic resources. . . ." City of Grapevine v. Dep't of Transp., 17 F.3d 1502, 1508 (D.C.Cir. 1994). Specifically, pursuant to section 106 of the Act, a federal agency "shall, prior to the approval of . . . any license . . . 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." NHPA, § 106, U.S.C. § 470f. An undertaking is any "project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . those requiring a federal permit, license or approval . . . ." 36 C.F.R. § 800.16(y). Section 106 also requires that the agency afford the Advisory Council on Historic Preservation (Advisory Council) "a reasonable opportunity to comment" on the undertaking. Id.

The Advisory Council has promulgated regulations setting forth how federal agencies must comply with section 106. See, 36 C.F.R. 800. First, an agency official "shall make a reasonable and good faith effort" to identify historic properties[6] that may be affected by the undertaking, and evaluate whether these properties are eligible for the National Register. 36 C.F.R. § 800.4(b) & (c); see 36 C.F.R. § 60.4 (criteria for assessing eligibility). The agency will next assess the possible effects of the undertaking on any eligible historic properties found, 36 C.F.R. §§ 800.4(d), 800.5(a), and determine whether any effects will be adverse. 36 C.F.R. § 800.5. "An adverse effect is found when an undertaking **may** alter, directly or indirectly, **any** of the characteristics of a historic property that qualify the property for inclusion in the National Register." 36 C.F.R. §

[6] Historic properties are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior." 36 C.F.R. § 800.16(l)(1).

800.5(a)(1) (emphasis added).[7] If the agency finds potential adverse effects, it must seek ways to avoid or mitigate those adverse effects. 36 C.F.R. § 800.6. If the agency is unable to resolve the adverse effects of the undertaking, it must obtain comments by the Advisory Council and consider these in any decision to approve the undertaking. 36 C.F.R. § 800.7.

Importantly, at each step, section 106 requires consultation and communication among agency officials, the relevant State Historic Preservation Officer (SHPO), affected tribes and other interested persons, including the public.[8] See C.F.R. § 800.2; see also City of Alexandria, 198 F.3d at 124; SUWA v. Norton, 326 F.Supp.2d. at 108.[9] The purpose of this consultation is to involve agency official and others interested parties together in the identification of "historic properties potentially affected by the undertaking, assess[ment of] its effects and [the] seek[ing of] ways to avoid, minimize or mitigate any adverse effects on historic properties." 36 C.F.R. § 800.1(a); see also SUWA v. Norton, 326 F.Supp.2d. at 108.

Finally, section 106 requires the agency to document its compliance with the process sufficiently "to enable any reviewing parties to understand" the basis of agency "determination, finding, or agreement" under the regulations. § 800.11(a); see also, e.g. § 800.11(d) (documentation requirements for finding of no historic properties affected); § 800.11(e) (documentation requirements for finding or no adverse effect or adverse effect).

IV. General Comments

A. Average Conditions versus Variable and Extreme Conditions

P-48.10

As you know, the surface area, volume and salinity of Great Salt Lake vary considerably, based largely on weather. These variable conditions have significant impact on wildlife and recreation. Indeed, wildlife, including birds, and wildlife habitat are more vulnerable to, and their viability and health more influenced by, extreme rather than by average

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[7] "Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative." 36 C.F.R. § 800.5(a)(1).

[8] As the regulations make clear "[t]he views of the public are essential to informed Federal decision-making in the section 106 process. The agency official shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effect on historic properties . . . ." 36 C.F.R. § 800.2(d)(1). In addition, "[t]he agency official must . . . provide the public with information about an undertaking and its effect on historic properties and seek public comment and input." 36 C.F.R. § 800.2(d)(2).

[9] The Advisory Council regulations require consultation at every step of the section 106 process, including, for example, the scope of identification efforts, 800.4(a)(3), the identification of historic properties, 800.4(b); the evaluation whether a property is eligible for listing, 800.4(c), a finding of non historic properties effected, 800.4(d), 800.5(c), the application of the criteria of adverse effect, 800.5(a)(1), and the resolution of adverse effects. 800.6(a).

conditions. Therefore, the Army Corps must base its analysis of the GSL Minerals Proposal **not** on average conditions, regardless of the averaging period, but on some measure of extreme conditions.

The discussion below focuses on many factors that vary in intensity and impact based on the condition of the lake – for example, predator access is increased in low water years, the importance of the North Arm to eared grebes is increased in high water years and impediments to water flows and recreation are increased in low water years. Therefore, the only way that the Army Corps can access the impacts of the planned project is to consider its impacts in high water and in low water years. At a minimum, the Army Corps must undertake all its analysis and decisionmaking relative to the proposed project based on **each** of water levels representing the following elevations: 4211.85 feet (representing two historic periods of high water), 4191.3 feet (representing two historic periods of low water), and the mean average elevation of 4202 feet above sea level.[10]

B. Water Use P-48.11

There are many mineral salts and other similar extractive industries located within Great Salt Lake that use vast quantities of lake water.[11] It is imperative that the Army Corps determine not only the total annual water volume to be used by the GSL Minerals Proposal, but also the total annual water use of Great Salt Lake Minerals' current operations, as well as the operations of other industries drawing on lake waters. Only with this information can the Army Corps determine the individual, cumulative and indirect impacts of the planned project on the aquatic community, the environment and the public interest. The extent of this water use will impact lake volume, water quality, wildlife habitat, recreation and other relevant environmental values. This is particularly important because the lake's current elevation of 4194.4 (near Saline) is close to the all-time low elevation.

The draw down of lake waters by the project, individually and cumulatively, will have widespread impact – particularly when the lake is at low levels. During low lake levels, water will be taken from the main body of the lake and placed in artificial evaporation ponds, all, or parts of which, would not be otherwise underwater. This decreases the volume of the lake. Under the proposed scenario, approximately 33,000 acres of the lake will be diked and converted into evaporation ponds. Assuming the ponds were covered with one foot of water, these proposed ponds alone would entail the consumption of 10.7 **billion** gallons of water.[12] This amount of water loss, particularly when multiplied cumulatively to include all mineral salts and other consumptive uses, will affect the level of Great Salt Lake and its depth, particularly in key locations, such as between the proposed North Arm dike system and Gunnison Island. In turn, low lake levels,

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[10] See: http://ut.water.usgs.gov/gslelevgraphs/GSL.WSAlt.Aug07.pdf.

[11] Any suggestion that this water use is non-consumptive belies logic. The water impounded into the evaporation ponds is taken out of a relatively intact ecosystem and sequestered for industrial purposes in ponds.

[12] Of course, the public has no idea how much water the proposed project will use. This information must be made public and incorporated into the Army Corps decisionmaking.

exacerbated by this consumptive use, would not only affect water quality, but would also make it that much more probable that predators and even people could access Gunnison Island via a land bridge or bridges.[13] This occurred during the low lake level of the 1960s when the island was trespassed by humans with goats and many young pelicans where killed using .22 rifle ammunition.[14]

Thus, included in the Army Corps analysis should be a determination of the draw down of lake water that will result as a consequence of the proposed project. This determination should include an assessment of Great Salt Lake Minerals' ongoing efforts to make its existing facilities more efficient, thereby using more lake water. These calculations then must be applied to determine impact on water levels to determine both individual and cumulative impacts on water quality as well as the potential for creating more predator and human access to Gunnison Island and other important wildlife habitats. In making these determinations, the Army Corps should rely on the recently completed USGS maps that show the elevation of the bed of Great Salt Lake in detail. The North Arm map indicates that the lake bottom between the west side of the North Arm and Gunnison Island is essentially dry at lake elevations between 4192 and 4193 feet above sea level. In 2005, the Great Salt Lake level at the gage station on Promontory Point registered between 4194 and 4195.

C. Purpose and Alternatives

P-48.12

The stated purpose of the GSL Minerals Proposal is unreasonably narrow and erroneously and artificially restricts the range of practicable alternatives to the project. This is particularly true here where the applicant seeks strictly private gain by filling an enormous area of a water of the United States held in trust for the citizens of Utah. The purpose of the project should be rewritten more broadly so that less damaging practicable alternatives – such as continuing to acquire potassium off-site – are viable and considered in depth.

However, if the Army Corps persists in unduly restricting the purpose of the project, the agency must consider the less damaging alternative of locating evaporation ponds outside of the waters of the United States – above the bed of Great Salt Lake. Likely the most appropriate location for such ponds would be on the west side of the lake, including in and around the Newfoundland Evaporation Basin. Examination of alternatives that construct evaporation ponds some distance from the shores of the lake should be considered.

[13] We know, for example, that historically, there has been land bridge access to Gunnison Island when the South Arm was at approximately 4193 feet above sea level, less than two feet lower than current lake levels.
[14] Utah Fish and Game publication and personal testimony of Jack Rensel, DWR, retired.

In any case, because the GSL Minerals Proposal is a non-water dependent project,[15] the presumption is that a practicable alternative exists. This presumption holds unless clearly demonstrated otherwise. Indeed, the Army Corps may not issue a § 404 permit unless the agency has independently verified all relevant information and provided detailed, clear and convincing information **proving** that an alternative with less adverse impact is impracticable. Here, such analysis underscores the need to restate the purpose of the project and undertake rigorous exploration of practicable alternatives.

D. Cultural Resources P-48.13

Cultural resources are evaluated by a field inventory prior to ground disturbance to make a determination of significance and adverse effect. Consultation among agencies and the relevant Native American tribes is required by federal and state regulations. Once the project moves to the construction phase, the areas of ground disturbance may be monitored so that any new discoveries unearthed by construction can be inventoried and evaluated for significance.

The GSL Minerals Proposal for Bear River Bay on the east side of the lake is adjacent to an area that is one of the richest archaeological landscapes in the state of Utah. The areas immediately east and northeast of the existing Great Salt Lake Minerals ponds harbor hundreds of campsites, villages, and human burials. Most of the cultural resources in those areas date to the Fremont period (A.D. 800 – 1200 in the case of the Great Salt Lake area). Hundreds of archaeological sites and thousands of human bone/burials were discovered east and northeast of the company's ponds in the late 1980s and early 1990s after they were exposed by receding Great Salt Lake waters. Many more cultural resources remain in those areas and periodically come to light. Importantly, the area north of the existing the Great Salt Lake Minerals ponds also contains archaeological sites. Eleven human burials were recovered from that area in 2001. That area is less known, but seems to yield remains dating to the Late Prehistoric period (post A.D. 1300). The age of those remains is important because they are directly related to the living tribes of northern Utah; specifically the Northwestern Band of the Shoshone Nation.

Any ground disturbance in the areas bordering the existing the Great Salt Lake Minerals ponds in Bear River Bay will likely encounter abundant cultural resources significant for their scientific value and significant to the heritage and religious values of living Native American peoples.

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[15] The GSL Minerals Proposal is not water dependent. The relevant regulations state that where a project "does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose," it is not water-dependent. 40 C.F.R. § 230.10(a)(3). Plainly, mineral salts extraction need not occur within the water or a special aquatic site – it can occur on dry land. While access to Great Salt Lake may be necessary to extract minerals from Great Salt Lake water, that a pipe or pump may be located in the lake to gain access to the water does not mean that 33,000 acres of evaporation ponds must be located on the bed of the lake. Moreover, as Great Salt Lake Minerals currently gets its potassium from mines on dry land, there is nothing about obtaining this mineral that requires access to or siting in special aquatic sites, much less Great Salt Lake.

The proposal for Clyman Bay on the west side of Great Salt Lake may also encounter cultural resources. Less is known about that area, but the apparent absence of fresh water streams creating wetlands in that area may imply that cultural resources there will be fewer than in Bear River Bay. The proposed project area will have to be inventoried to make a determination of adverse effect. Furthermore, increased access to the area of Clyman Bay caused by the expansion of the ponds may increase use and result in adverse effects on cultural resources outside of the primary project area. This may be significant for the proposed development in Clyman Bay because of the existence of dry caves in the rocky ridges and mountains bordering the west side of Great Salt Lake. As stated above, historic preservation laws and regulations also apply to indirect impacts to cultural resources.

E. Seismic Concerns

P-48.14

Five submerged segments of the Great Salt Lake fault system have generated magnitude 6.8 - 7.2 earthquakes in the past and will do so in the future. At least four of these, the Rozelle, Promontory, Fremont, and Carrington segments, directly threaten the proposed industrial expansion to the northwest arm of the lake. Ground-shaking accelerations as great as 1.0 g and tsunami waves as high as three to four meters generated by sublacustrine fault ruptures could cause catastrophic oil and gas spills into the lake from pumping facilities, pipelines, and supply trucks supporting both proposed and existing evaporation ponds. Such spills could reasonably be expected to destroy bird, brine shrimp, and brine fly habitats lake-wide in a single event. No consideration of this potential disaster scenario has been addressed to date.

F. Existing Condition of Great Salt Lake

P-48.15

Plainly, in order to determine accurately the impact of the proposed project on the aquatic ecosystem, the physical and chemical make up of lake waters, and on recreation, aesthetics and the public interest, the current condition of Great Salt Lake, with respect to these values, must be determined.[16] This entails, among other things, using the most precise and current information available – data that reflect all development in and around the lake, all remaining habitat and the conditional, the functionality of remaining habitat and all lost habitat. Careful distinctions between types of habitat must be made as well.

Furthermore, to determine the impacts of the GSL Minerals Proposal on wild and aquatic life, particularly birds, calculations of lost and remaining habitat must be made on a species specific basis. In other words, any suggestion that a particular percentage of habitat is left or that a certain number of acres remains intact must take into account whether a specific species of bird will actually use that habitat. Therefore, it is necessary to examine individual and cumulative impacts to a particular species of bird, thereby taking a species specific approach to habitat availability and loss.

[16] This includes a lake-wide analysis of past, current and future carrying capacity for waterbirds.

In addition, the maps depicted and relied upon in the public information documents are outdated. Since it is critical to consider the impacts of this project on the lake as it is today and to take into consideration existing fragmentation in both the North Arm and South Arm, the Army Corps must base its decision making on current maps.[17] The agency must use and present maps, such as satellite images, that depict **all** existing dike structures through out the lake.

G. Cumulative Impact Analysis P-48.16

To address cumulative impacts, the Army Corps must initially establish the geographical area in which cumulative impacts are to be considered. The geographic scope of the cumulative analysis will vary depending on the value at issue. For example, for migratory birds, the most appropriate scale for cumulative impacts will consider where the birds migrate to and from, and then determine how that migratory bird habitat has changed over time. In addition, the analysis must address impacts to the entire local ecosystem upon which these birds rely. This means, for example, that impacts to Utah Lake should be considered. Because migratory birds do not use higher level terrain, a boundary that uses elevation as a factor can be established to encompass the area within the Great Salt Lake watershed that migratory and other waterbirds use.

While this area of analysis is extensive, birds once used the entire watershed and wetland system encompassed by this area for habitat – at least until those wetlands were filled, many under 404 general and individual permits. In turn, mitigation efforts connected with these permits, have, in many cases, not been successful, resulting in a cumulative loss of habitat and functionality. In order to fully understand the cumulative impact to, for example, bird life and water quality, the agency must understand how habitat in this extended area has been impacted.

Water quality is another important parameter for cumulative impact analysis. To address these impacts, the Army Corps should reference the lowest water quality station in each sub-watershed around the lake and assume it represents the health of the entire sub-watershed. With that information, the agency could identify water quality issues and determine how the planned project would further aggravate those problems.

Moreover, the agency's impact analysis must consider past activities that cumulatively impact the aquatic ecosystem, as well as other relevant values. Great Salt Lake Minerals and other similar extractive industries have been operating on the lake for well over a half century. Likewise, the Great Salt Lake ecosystem has been experiencing a net loss of the waters of the United States, including connected wetlands, for decades prior to the advent of these development activities. Therefore, it is incumbent on the Army Corps to

[17] The Army Corps should, at a minimum, use the new high-resolution bathymetric maps of the South Arm (2005) and the North Arm (2006) prepared by Robert Baskin and coauthors from the USGS Water Resources Division in Salt Lake City, accessible at http://www.gelib.com/salt-lake-bathymetric.htm.

consider, in its cumulative impact analysis, the effects of all past activities for which information is available from at least the beginning of the 20th century onward.[18]

Finally, for many of the birds that rely on Great Salt Lake, this ecosystem is but one factor in their ability to survive and thrive. Therefore, some analysis must be undertaken to determine how impacts to other key ecosystems will cumulatively affect these birds. By the same token, the Army Corps must also consider the condition of other saline lakes in the West.

H. The Lake Effect P-48.17

As you know, the "lake effect" is responsible for much precipitation, particularly in the form of snowfall, along the Wasatch Front. The planned minerals extraction project may adversely impact the lake effect by increasing evaporation from Great Salt Lake, reducing lake volume, and decreasing water temperatures in the winter by making the lake more shallow. These and other potential consequences must be analyzed, cumulatively and individually.

I. Section 404 and NEPA Analysis

For actions subject to NEPA, the analysis of alternatives required for the NEPA environmental documents will in most cases provide the information for the evaluation of alternatives under the CWA Guidelines. If, however, the NEPA documents do not consider the alternatives in sufficient detail to respond to the requirements of the Guidelines, it may be necessary to supplement NEPA documents with additional information. 40 C.F.R. § 230.10(a)(4). Moreover, the Army Corps must comply with the relevant regulations, including by making all relevant factual findings. This means that, whether under the requirements of NEPA or the Clean Water Act, the Army Corps must additionally consider the following, more specific environmental impacts which focus on the agency's regulatory obligations: P-48.18

V. More Specific Comments

A. Section 230.10

40 C.F.R. § 230.10 Generally

Section 230.10 states that the Army Corps' "compliance evaluation procedures will vary to reflect the seriousness of the potential for adverse impacts on aquatic ecosystems" threatened by the proposed project. 40 C.F.R. § 230.10. Here, the potential for serious adverse impact is indeed serious. As the public notice itself states, "the applicant asserts that approximately 30,713.75 [surface] acres of waters [of the United States] **will be lost** due to project construction under the proposed alternative." Public Notice at 6 (emphasis

[18] See REGL 84-9, 26 Jul 84.

added).[19] Moreover, the waters to be lost comprise one of the most ecologically significant aquatic ecosystems in the Western Hemisphere. Thus, adherence to the relevant guidelines must be unwavering and must reflect the sheer immensity of the proposed project.

40 C.F.R. § 230.10(a)

That said, the Army Corps must consider, as alternatives to the GSL Minerals Proposal, "[a]ctivities which do not involve a discharge or dredged or fill material into waters of the United States." 40 C.F.R. § 230.10(a)(1)(i). In addition, here, where the proposal will discharge into a "special aquatic site" and is not water-dependent, "practicable alternatives that do not involve special aquatic sites are presumed to be available" and alternatives that which do not involve special aquatic sites are assumed to result in less adverse environmental impacts. 40 C.F.R. § 230.10(a)(3).

As mentioned above, the stated purpose of the GSL Minerals Proposal is unreasonably narrow and erroneously and artificially restricts the range of practicable alternatives to the project. This overly constrained statement of the purpose of the project prohibits compliance with these regulatory requirements. In any case, the Army Corps' analysis must include a thorough and independent consideration of all less damaging practicable alternatives to the proposed project, including those that do not involve discharge into waters of the United State and to not involve special aquatic sites.

Section 230.10(b)(1) – Water Quality P-48.19

Section 230.10(b)(1) prohibits discharge of dredged or fill material into a water of the United States where it will "cause or contribute to . . . a violation of any applicable State water quality standard." 40 C.F.R. § 230.10(b)(1).

Recognizing the importance of Great Salt Lake, not only to Utah, but to the Nation and the World, the Utah Division of Water Quality (DWQ) has appropriately designated the beneficial uses of the lake as:

> for primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including the[] necessary aquatic organisms in their food chain, and mineral extraction.

Utah Admin. Code R317-2-6.5; see also 40 C.F.R. § 131.10(a) ("Each state must specify appropriate water uses to be achieved and protected."); 40 C.F.R. § 131.11(a) ("For waters with multiple use designations, **the criteria shall support the most sensitive use**.") (emphasis added).

As DWQ has acknowledged in this designation, clean water is critical to maintaining the health of the Great Salt Lake ecosystem and protecting recreation there. Water of high

[19] As repeated throughout these comments, in addition to the loss of surface area of the lake, will be the loss of water volume, which will also be significant.

quality is necessary to keep the lake's wetlands functioning and the processes working to ensure an ample safe food supply for the millions of birds that depend upon it. Clean water is also necessary to protect recreation in and around Great Salt Lake – whether it involves bird watching, ducking hunting, wading or sailing.

As the GSL Minerals proposal will result in the **loss** of approximately 30,713.75 acres of waters of the United States and thereby will impair, if not destroy, the beneficial uses of 30,713.75 surface acres[20] of Great Salt Lake for primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including the necessary aquatic organisms in their food chain, the Army Corps may not issue a permit for the proposed project.

The Army Corps must consider the following factors in addressing the individual and cumulative impacts of the proposed project on water quality:

P-48.20 ■ Utah's narrative water quality standard;
P-48.21 ■ the achievement and protection of all designated beneficial uses of Great Salt Lake;
P-48.22 ■ significant mercury and selenium contamination of the lake and the potential of the project to exacerbate this contamination;
P-48.23 ■ expert concerns raised by FWS and DWR;
P-48.24 ■ reduction in open water in Bear River Bay and the resulting concentration of nutrients from sewage and irrigation sources;
P-48.25 ■ interruption of water flows caused by diking;
P-48.26 ■ impacts of fill material directly and indirectly;
P-48.27 ■ impacts of changes to substrate;
P-48.28 ■ impacts of evaporation of huge qualities of water;
P-48.29 ■ effects of pond flushing, including in the Bear River Bay area where the introduction of more salt would change salinity, and possibly change the size and length of the salt tongue and alter other ecosystem values, thereby impacting fisheries and other wildlife;
P-48.30 ■ the use of existing and proposed pump stations, fuels, trucks and other vehicles, gravity flow trenches, causeways and other infrastructure;
P-48.31 ■ potential catastrophic pollution of lake waters by an earth-quake-induced oil and gas spill or other contamination;
P-48.32 ■ cumulative impact of drought, including drought induced by global warming;
P-48.33 ■ cumulative impact of reasonably foreseeable population and development increases and increased water demand, run off and nutrient discharges;
P-48.34 ■ cumulative impact of all other current and proposed mineral salts extraction and other extractive industries; and,
P-48.35 ■ cumulative loss of wetlands and other ecosystem components that help to maintain or improve water quality.

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[20] As described elsewhere, in addition to the loss of surface acres, the planned project will result in the lost of some enormous, but undisclosed volume of water – particularly when considered over time. The impacts of the loss of surface as well as volume must be examined closely.

The Army Corps must also quantify and qualify and fully understand the impacts to water quality stemming from **existing** mineral salts extraction activity and analyze these impacts cumulatively, including water use, concentration of pollutants in evaporation ponds, and the flushing of evaporation ponds. In addition, to understand properly the impacts of the P-48.36

proposal on water quality, the agency must know the volume and quality of **all** water being used for **all** existing operations affecting the lake, as well as for the proposed expansion and consider the impacts of this water use on non-impounded areas of the lake. p-48.37

Section 230.10(c) – Significant Degradation

As repeated above, the GSL Minerals Proposal will result in the loss of more than 30,000 surface acres of waters of the United States, as well as huge volume of water. The project will have significant adverse effects on wildlife, special aquatic sites, life stages of aquatic life, wildlife habitat, ecosystem diversity, productivity and stability, recreation, aesthetics, and other values. Therefore, the Army Corps may not legally issue a permit for the project. This is particularly true because, both individually and cumulatively, this project results in the loss of too many acres of waters of the United States and thereby jeopardizes the health of the remaining ecosystem and the survivability of the organisms and wildlife that depend upon it. Such a loss of habitat and functionality cannot be mitigated, especially given the types of special aquatic sites at issue and the poor track record of mitigation efforts around the lake.[21]

In any case, in its review of GSL Minerals Proposal, the Army Corps must consider individually and cumulatively the impacts of the project on all the values detailed in section 230.10(c).

In addition to those factors listed and discussed subsequently, the Army Corps must consider the following likely impacts from the planned project on navigation, public recreation, the public interest and aesthetics: P-48.38 (Continues on next page)

- The discharge of dredge or fill material will further limit navigation of and public access to the shoreline, as well as previously open waters of Great Salt Lake. This will in turn limit the ability of the public to recreate freely on the lake and will concentrate the public's use in a smaller area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas;
- The 8,000 acre expansion proposal will, at times, cut off water flows and access to and from Bear River Bay. This will severely limit the ability of the public to recreate freely on the lake and will concentrate public use in a smaller area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas;
- To the extent that discharge of dredge or fill material will adversely affect water birds and wildlife, as well as scenic values, public recreation that depends upon these values will be adversely impacted;

[21] The Army Corps should develop and make public criteria for making a determination of this "impact threshold."

P-48.38 (Continuing)

- Impacts to navigation and public access will be exacerbated by low water as lake volume decreases and the shoreline shrinks;
- Diking will further impede navigation and access from one part of the bay to the other – access which is already significantly impaired by existing diking and conversion of a relatively intact ecosystem into evaporation ponds;
- Transforming the west side of the lake into a more significant industrial zone will further result in a loss of quiet, solitude, scenic beauty and unparalleled remoteness. Similar impacts will be felt on the less remote, but more heavily used Bear River Bay and Willard Spur area of the lake; and
- The proposed project will modify the natural setting and sounds of Great Salt Lake, making it an industrialized site. Thus, the impact of the proposed expansion on the aquatic beauty and aesthetics of Great Salt Lake is extensive. Cumulatively, this impact is even more significant, as a significant portion of the lake is currently developed. P-48.39

Section 230.10(d)

Pursuant to section 230.10(d), the Army Corps may not permit the discharge of dredged or fill material "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." 40 C.F.R. § 230.10(d). Given the magnitude of the proposed project and its significant adverse impact on special aquatic sites and ecosystem values, the adverse effects of the proposal cannot be minimized. This is particularly true given that the function and value of special aquatic sites, including mud flats and playas, cannot be created or replaced elsewhere.

In making any determination under this section, the Army Corps must consider:

- all cumulative impacts, including impacts from current Great Salt Lake Minerals operations, other current and proposed mineral salts extraction operations on the lake, and any other existing and reasonably foreseeable projects and development, including oil and gas development, that have adversely impacted or will adversely impact special aquatic sites, as well as other waters of the United States;
- the cumulative loss of special aquatic sites and other ecosystem values, as well as recreation and aesthetics, due to the dredging and filling of the waters of Great Salt Lake; and
- the degree to which mitigation and other efforts have been unable to recreate or replace the environmental characteristics and values lost as a result of the dredging and filling of the waters of Great Salt Lake and the degree to which these efforts have not been completed, monitored or analyzed sufficiently to determine their success. P-48.40

Likely cumulative impacts include:

- Of particular concern are the cumulative impacts of the proposed expansion on all aquatic ecosystem values as well as navigation, aquatic beauty, and public recreation. Factors such as increased storm water run off, increased recreation, and

P-48.40
(Continuing)

increased near-lake development all also have cumulative adverse impacts on these resources; and,

- There are currently ten producing mineral leases totaling 171,644 acres operating within Great Salt Lake. Like the Great Salt Lake Minerals expansion proposal, these operations involve diking and conversion of a functioning ecosystem into industrial solar evaporation ponds and similar facilities. In addition, areas of the bed of Great Salt Lake are currently leased for oil and gas development and there exists a keen interest in the leasing of tens of thousands of additional acres for oil and gas development. These activities will certainly have adverse cumulative adverse effects on aquatic ecosystem values, as well as the public interest.

B. Section 230.11 – Factual Determinations

As part of its analysis of the GSL Minerals Proposal, the Army Corps must make factual findings that quantify and qualify the short and long-term effects of the planned project on "the physical, chemical, and biological components of the aquatic environment." 40 C.F.R. § 230.11. These written findings must include a determination of the individual and cumulative effects of the project on: the substrate at the proposed disposal site, 40 C.F.R. § 230.11(a); current patterns, water fluctuation, circulation, chemistry, salinity, clarity, color, odor, dissolved gas levels, temperature, nutrients, and eutrophication, and obstruction of flow, alterations of bottom currents and other significant changes to the hydrologic regime, 40 C.F.R. § 230.11(b); the kinds and concentrations of suspended particulates, turbidity, the grain size and material proposed for discharge, as well as the effects of current patterns, water circulation and fluctuations, wind and wave action and other physical factors on the movement of suspended particles, 40 C.F.R. § 230.11(c); the degree to which contaminants are introduced, relocated, or increased, 40 C.F.R. § 230.11(d); and, the structure and function of the aquatic ecosystem and aquatic organisms, including as related to changes in substrate characteristics and elevation, water or substrate chemistry, nutrients, currents, circulation, fluctuation, and salinity. 40 C.F.R. § 230.11(e).

In addition, findings must be made to determine the cumulative effects of past, present and future discharges of dredged or fill material. As the relevant regulations confirm, "the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems." 40 C.F.R. § 230.11(g)(1). To carry out the requirements of 40 C.F.R. § 230.11(g)(1), the Army Corps must predict cumulative effects to the extent reasonable and practical and collect and solicit information from other sources. 40 C.F.R. § 230.11(g)(2).

Sources from which the Army Corps should collect and solicit information, include:

- DWR and FWS, including all DWR and FWS Great Salt Lake bird survey data, bird count data from the Bear River Migratory Bird Refuge, as well as seminal works dealing with bird population data and habitat data (e.g. Wm. H. Behle, *The Birdlife of the Great Salt Lake*, U of U Press, 1958, and research of Dr. Joseph R. Jehl, Jr); P-48.41
- The Utah State Engineer and databases concerning water rights appropriations;

P-48.41 (Continuing)

- EPA's STORET site and other water quality data;
- Corps RAMS database and paper files to determine within the Great Salt Lake watershed: 1) number of 404 permits authorized; 2) type and acreage of waters impacted; and, 3) mitigated acres/type of wetlands, and success;[22]
- All applicable regional and local land use plans, or a SAMP, if available;
- All USGS maps and studies related to Great Salt Lake;
- All National Wetland Inventory Maps and the USGS National Land Cover Data Set (NLCD).
- 2004 Legacy Parkway Wildlife Impact Analysis Technical Memorandum and supporting materials;
- Literature and studies concerning the impacts of dikes on nesting bird habitats and nesting success on dikes;
- Literature and studies concerning the effects of roads and dikes as travel corridors for mesopredators on nesting birds, including those studies conducted on Great Salt Lake and the Bear River Migratory Bird Refuge specifically;
- Population models and analyses from the lake wide snowy plover survey (Cavitt, et al.); and,
- Ducks Unlimited vegetation mapping data on specific managed areas on Great Salt Lake and analysis of direct, indirect and cumulative effects to Bear River Refuge, Willard Spur and Willard Bay. This data show, among other things, that the greatest concentrations of sego pond weed in the United States is in Bear River Bay.

Finally, the Army Corps must determine the secondary effect on the aquatic ecosystem that will result from the GSL Minerals Proposal. 40 C.F.R. § 230.11(h). We note that with a project of this magnitude and scope – both temporal and physical – it is difficult to distinguish between primary and secondary effects. Therefore, we refer the Army Corps to the issues and effects listed throughout these comments. All must be examined, equally thoroughly and precisely, whether they are primary, secondary, individual, cumulative, direct or indirect. P-48.42

C. Subpart C – Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem. P-48.43

Subpart C describes the effects that the Army Corps must consider in making the factual determinations and findings of compliance or non-compliance in subpart B. In addition,

[22] In assessing the planned project, the Army Corps must include a description of historical permitting activity. The RAMS database is a critical source of this information. This database should list acreage impacted under each permit and what type of waters were impacted. The database may further state what acreage of impact was mitigated. However, to determine if mitigation was completed or successful, it is likely that Army Corps must examine its paper files. It is crucial to a proper examination of the cumulative impacts of the GSL Minerals Proposal that that Army Corps determine the success and completion rate of past mitigation efforts relative to 404 permits.

the subpart describes the values and environmental characteristics that may be lost as a result of the planned project.

Section 230.20 – Substrate

As section 230.20 recognizes, the discharge of dredged or fill material can result in detrimental changes to the "complex physical, chemical, and biological characteristics of the substrate" – the organic and inorganic solid materials that underlies open waters and constitutes the surface of wetlands, including water and other liquids or gases that fill the spaces between solid particles. 40 C.F.R. § 230.20(a). The Army Corps must analyze the extent to which the planned project will impact the substrate of Great Salt Lake, its wetlands and mudflats and the degree to which changes in substrate will result in the loss of environmental characteristics and values described in 40 C.F.R. § 230.20(b). P-48.44

Section 230.21 – Suspended Particles/Turbidity

"Suspended particulates in the aquatic ecosystem consist of fine-grained mineral particles . . . and organic particles." 40 C.F.R. § 230.21. The discharge of dredged or fill material can result in elevated levels of suspended particulates, at the expense of ecosystem health. 40 C.F.R. § 230.21(b). Therefore, in access the Great Salt Lake Minerals Proposal, the Army Corps must evaluate the "extent and persistence" of any resulting individual and cumulative adverse impacts to the physical and chemical characteristics of the aquatic ecosystem – including the increase in suspended particulates that: P-48.45

- will exist in the evaporation ponds;
- results from the introduction of fill material;
- is caused by flushing of ponds;
- is of a consequence of pumping;
- stems from obstruction of flows; and,
- otherwise is caused by the planned project.

Section 230.22 – Water

Plainly, the relevant regulations recognize the significance of water quality to ecosystem health and the extent to which the introduction of dredge and fill material can negatively impact water quality. Section 230.33 states: "Water forms part of a dynamic aquatic life-supporting system. Water clarity, nutrients and chemical content, physical and biological content, dissolved gas levels, pH, and temperature contribute to its life-sustaining capabilities." 40 C.F.R. § 230.22. Each of these factors will likely be adversely affected by the planned project, including negative effects on "clarity, color, and odor," as well as a reduction in or elimination of the "suitability" of Great Salt Lake waters for aquatics organisms, recreation and aesthetics. These comments address many of the potential impacts to water that will result from the Great Salt Lake Minerals Proposal – both cumulatively and individually. In addition to those listed through out these comments, the Army Corps must address those applicable to the present proposal as identified in 40 C.F.R. § 230.22. P-48.46

Section 230.23 – Current Patterns and Water Circulation

Section 230.23 acknowledges the obvious – that the discharge of dredge or fill material can change current patterns and water circulations by obstructing flow, changing the direction or velocity of water flow and circulation and changing the dimensions of a water body. 40 C.F.R. § 230.23(b). The result can be adverse impacts on: "Location, structure, and dynamics of aquatic communities; shoreline and substrate erosion and deposition rates; the deposition of suspended particulates; the rate and extent of mixing of dissolved and suspended components of the water body; and water stratification." Id. Given that the GSL Minerals Proposal is designed to thwart completely water circulation and current patterns over 33,000 acres, the adverse impacts described in this section are certain to occur on a widespread level and must be considered fully, both individually and cumulatively. P-48.47

Section 230.24 – Normal Water Fluctuations

Likewise, the GSL Minerals Proposal is designed to thwart completely normal water fluctuations over 33,000 acres. As a result, seasonal and annual fluctuations in water levels will not occur within the evaporations ponds. Moreover, seasonal and annual fluctuations of water level outside the ponds will be adversely affected by water withdrawals and physical impediments, as well as other factors. As a result, the proposed project will "change salinity patterns, alter erosion or sedimentation rates, aggravated water temperature extremes, and upset the nutrient and dissolved oxygen balance of the aquatic ecosystem." 40 C.F.R. § 230.24(b). All these modifications, which have been identified in the relevant regulations as having adverse impacts on protected values, must be considered fully, both individually and cumulatively. P-48.48

Section 230.25 – Salinity Gradients

Although section 230.25 speaks of salinity gradients where salt water from the ocean meets and mixes with fresh water, the section plainly applies to the mixing of fresh and saline water in Great Salt Lake as well as the mixing of the saline waters from different parts of the lake with distinct salinities. Importantly, this section acknowledges that restrictions in flows that will result from diking may change salinity gradients. This, in turn could result in a host of adverse impacts, including impacts on aquatic organisms that are harmed by these changes. 40 C.F.R. § 230.25. P-48.49

Likely Impacts to Physical and Chemical Characteristics

The Army Corps must evaluate and determine the effects of the GSL Minerals Proposal on the values and environmental characteristics described and referenced in subpart C. In addition to the considerations above, the agency must consider the following:

- The Great Salt Lake Minerals Proposal is intended to turn more than 30,000 surface acres of relatively intact ecosystem into essentially sterile evaporation ponds. This change will be permanent for the foreseeable future and impacts from the ponds evaporation ponds may endure forever. Moreover, as these ponds will concentrate salts for three years, the waters in the ponds will change over time, P-48.50 (Continues on next page)

becoming more and more inhospitable to wildlife. Thus, full consideration must be made of this wholesale transformation of a significant part of Great Salt Lake on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds.

■ The proposed project will interfere with the natural ebb and flow of the lake, as well as the mixing of the lake's waters. The proposed development in Clyman Bay would enclose 25,000 acres of water, as well as dike off about seven miles of shoreline on the western side of Gunnison Bay. The effects of this expanded development on water quality, together with the effects of current development, are certainly significant.	P-48.51
■ Mineral salts extraction changes the chemistry of the waters of Great Salt Lake, at the very least, on a local level. These changes – including the effects of increased concentrations of some minerals and decreased concentrations of others – and the impacts these changes may have on the biota of the lake have never been analyzed. Changes to water chemistry, both due to current mineral extraction and due to the impacts of increased extraction should be addressed, particularly as these changes impact algae, brine shrimp and water birds. In addition, more salts are extracted from the lake every year than are added by river inflows; therefore, the long-term extraction of minerals – which is likely to change the chemistry and ultimately the characters of the lake – should be evaluated.	P-48.52
■ Diking and the operation of solar evaporation ponds will increase evaporation from the lake with unknown impacts to water availability, water quality, wildlife habitat, wetlands and mud flats.	P-48.53
■ The expansion proposal will greatly increase the ongoing shift of minerals between Gunnison Bay and Bear River Bay, and also possibly Gilbert Bay. A full understanding of these possible shifts in minerals and their impacts to the various bays should be developed, including whether the movement of water and minerals could concentrate mercury or selenium in the receiving waters or in the waters from which the minerals and water are being removed. These effects should be quantified and analyzed.	P-48.54
■ Drought and low water will further exacerbate the water quality impacts of current and proposed operations. In addition, as the population of the Wasatch Front increases, there will be more demand for fresh water, likely resulting in less water reaching Great Salt Lake.	P-48.55
■ The Army Corps should consider the impacts of global climate change in its evaluation of this project. In addition to ordinary drought events, long-term climate change is expected to result in smaller snowpacks in the Wasatch Mountains and reduce flows of fresh water to the lake, potentially lowering water levels even below the historic minimum.	P-48.56
■ Construction of the dikes will disturb lake bed sediments and stir up contaminants. In addition, the use of motors, motorized vehicles and other equipment as a result of the development could adversely impact water quality.	P-48.57
■ Pumps, underwater canals, water intake points and discharge points all impact water quality, individually and cumulatively. Flushing of solar ponds impacts water quality by forcing into specific parts of the lake waters containing a high concentration of unspecified minerals.	P-48.58

- Removal of extremely high volumes of water from the open waters of the lake and sequestering them in largely sterile evaporation ponds affects water quality and quantity available to the Great Salt Lake ecosystem. Moreover, increased evaporation of waters from the lake, caused by an increase in water surface area resulting from the flooding of the ponds, will also impact these values. This loss of water could lower lake levels thereby further concentrating pollutants, further restricting natural water flows as well as public access. P-48.59

- The proposed expansion would result in the diking and conversion of a total 30,000 acres of Bear River Bay into essentially sterile evaporation ponds. Diking and conversion impacts water quality because it will interfere with the natural ebb and flow of the lake, as well as the mixing of the lake's waters. Indeed, the 8,000 acre expansion proposal appears to essentially cut off water flows and access to and from Bear River Bay, particularly when water levels are low, as they currently are. Similarly, flows between Bear River Bay and Willard Spur, which are critical to ecosystem function, will also be disrupted. In addition, as the Division of Wildlife Resources made plain, this area is important at low water levels because it creates a natural lake within the bay. IMC Kalium/DWR Memo, August 28, 1998 at 3. The effects of this expanded development on water quality, together with the effects of current development, will be significant. Specifically, circulation of fresh water, so critical to the Great Salt Lake ecosystem, will be impeded, especially during low water years. Since the open water of Willard Spur is an extremely valuable area for water birds the potential adverse impacts are certain and must be fully explored, based on flow patterns during low as well as high water years. P-48.60

D. Subpart D – Potential Impacts on Biological Characteristics of the Aquatic Ecosystem

Subpart D describes the effects that the Army Corps must consider in making the factual determinations and the findings of compliance or non-compliance in subpart D. In addition, the subpart describes the values and environmental characteristics that may be lost as a result of the planned project.

Section 230.30 – Threatened and Endangered Species

In keeping with federal law, the Army Corps must consider the impact of the GSL Minerals Proposal on listed species. 40 C.F.R. § 230.30. Although the agency currently states that there are no such species that may be affected, we suggest that peregrine falcon have used and may continue to use the north end of Bear River Bay. Moreover, we reserve the opportunity to make additional comments should other listed species be identified. P-48.61

Section 230.31 – Aquatic Organisms in the Food Web P-48.62 (Continues on next page)

Not surprisingly, the relevant regulations determine that the discharge of dredge or fill material into a water of the United States can adversely affect populations of fish, insects, and other organisms in the food web in all their life stages. 40 C.F.R. § 230.31. Resulting

contaminants and water quality changes can kill or debilitate these desirable organisms or favor undesirable organisms. Id. Similarly, desirable organisms can be smothered. Id. These comments address many of the potential impacts to aquatic organism that will result from the Great Salt Lake Minerals Proposal – both cumulatively and individually. In addition to those listed through out these comments, the Army Corps must address those applicable to the present proposal as identified in 40 C.F.R. § 230.31.

Section 230.32 – Other Wildlife

Because Great Salt Lake is of utmost importance to birds, many of these comments are devoted to describing the adverse impacts on birds, their habitat and the water that serves as the basis for that habitat. The importance of these considerations is underscored by section 230.32, which recognizes the severe impacts to wildlife, including birds, that are likely to result from the discharge of dredge or fill material into a water such as Great Salt Lake. Given the enormity of the proposed project, the Army Corps is duty bound to carefully examine all individual and cumulative impacts of the planned project on wildlife as identified in section 230.32 as well as in these comments and by all relevant state and federal agencies. P-48.63

Likely Impacts to Biological Characteristics of the Aquatic Ecosystem

The Army Corps must evaluate and determine the effects of the GSL Minerals Proposal on the values and environmental characteristics described and referenced in subpart D. In addition to the considerations above, the agency must consider the following:

- As noted above, the Great Salt Lake Minerals Proposal is intended to turn more than 30,000 surface acres of relatively intact ecosystem into essentially sterile evaporation ponds. This change will have permanent impacts to the lake. Diked areas will be cutoff from most, if not all, natural processes that affect the rest of the lake. Moreover, as these ponds will concentrate salts for three years, the waters in the ponds will change over time, becoming more and more inhospitable to wildlife. Thus, full consideration must be made of this wholesale transformation of a significant part the Great Salt Lake ecosystem on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds. P-48.64

- The discharge of dredged or fill material will further concentrate human usage in non-developed areas, thereby impacting wildlife habitat in these areas.
- Gunnison Island, located close to the 25,000 acre expansion proposal, hosts one of the largest breeding colonies for American white pelicans in North America. Gunnison Island is now the only nesting location for American White Pelicans in Utah. Currently, Great Salt Lake Mineral dikes come within approximately four and one half miles of Gunnison Island. The expansion proposal would place dikes as close as within two and one half miles of the island. P-48.65
    - Dike construction and maintenance will bring an added anthropogenic influence to the Bay including a dike additional miles closer to the island. These dikes will provide a road access for terrestrial predators to come closer to the island and a travel way to a land bridge to Gunnison during

low lake periods. It is necessary to understand what steps are required to ensure that the American white pelicans will continue to nest at Gunnison Island – yet no analysis has been undertaken. For example, particularly at lower lake levels, predators could take advantage of this diking to access breeding sites such as Gunnison Island. P-48.65 (continuing)

- Dikes would also increase potential human disturbances such as noise, lighting, and land vibrations. In 1963 during a low lake event, you could wade to the island from the west side according to DWR reports of human disturbance before the island was protected. During this human intrusion into the colony, many young pelicans we killed.
- With the close proximity to Gunnison Island, a concentration pond dike may become a roost site for flightless fledgling pelicans exposing them to land predators. A dike also makes trespass easier for casual or intentional human trespass.
- A buffer around Gunnison Island designed to protect this area from boats and airplanes and is not sufficient to safeguard the birds from disturbances brought on by permanent structures.

■ The proposed expansion has the potential to impact adversely other bird life. There has been no analysis of the impact of development on the eared grebe and other birds that depend upon the north arm during periods of flood, estimated by the Division to be approximately 10% of the time. In high precipitation years, as fresh water decreases salinity in the north and south arms, brine shrimp production in the north arm will exceed that in the south arm, and birds such as the eared grebe, Wilson's phalaropes and red-necked phalaropes will necessarily rely on the ecosystem of the north arm. The same may also be true for waterfowl. By the same token, diking and conversion to evaporation ponds will be in place for several decades. Within that time frame, the causeway could be breached or actions taken to better circulate the lake's waters. Again, the north arm could become even more important to birds such as the eared grebe. P-48.66 P-48.67

■ As the proposed 25,000 acre expansion would also dike off about seven miles of shoreline on the western side of Gunnison Bay, it may adversely impact birds such as the snowy plover. The potential impacts to bird life and other flora and fauna in this area should be fully explored. P-48.68

■ As noted above, DWR stated in connection with the area designated for the 8,000 expansion proposal in Bear River Bay: P-48.69 (Continues on next page)

> the undiked areas of Bear River Bay have tremendous value to wildlife, specifically birds. Some of the values include: molting/brood rearing areas for Canada geese and ducks; a foraging area for fish eating birds such as pelicans, cormorants, western grebes, [and] great blues herons; [and an eared] grebe nesting colony.

Memo from IMC Kalium Ogden Corp., Division of Wildlife Resources, Division of Forestry, Fire and State Lands to John Kimball, Director Division of Wildlife Resources and Arthur DuFault, Director Division of Forestry, Fire and State Lands, August 28, 1998 at page 2, Exhibit 8, attached. With regard to some of the particular parcels slated for diking and conversion, the agency stated:

> DWR also identified lands of important wildlife value in Sections 16, 17 and 18, Township 7 North, Range 4 West. These lands were not included in the lease exchange but are valued by DWR for periods when lake level falls below 4200' in Bear River Bay.[23] DWR is particularly interested in lands which are north and northwest of the existing dikes of IMC Kalium because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural "lake" within the bay.

These statements show that the proposed expansion will interfere with and significantly impair the public trust.

- Other statements echo that Bear River Bay is of critical importance to waterbirds. As the Utah Department of Natural Resources has confirmed:

> Bear River Bay is the freshest region and receives the largest volume of riverine inflow. Its near-surface salinity is similar to that of the Bear River. This system is bounded on the north and east by state, federal, and private wetlands; on the south by industry; and to the west by the Promontory Mountains. This bay is fresh enough to support a community of submergent hydrophytes including sago pondweed (Potamogeton pectinatus) and widgeon grass (Ruppia maritima). There are significant islands of emergent wetlands here, especially in the east part of the bay in the Willard Spur. . . . An ecological element of vital importance to pisciverus birds in this area is the fishery that persists when the lake elevation is higher than 4,200 feet (1,280.2 m) above sea level. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake. Although the smallest region on the lake, it makes an exceptional contribution to the lake's avian population.[24] P-48.70

Because of the importance of this water body to wildlife habitat, particularly close examination of the impacts of the current and proposed expansion on ecosystem values must be undertaken.

- The Great Salt Lake Waterbird Survey, conducted from 1997 to 2001, confirms the conclusions reached by the Division of Wildlife Resources and Department of Natural Resources. This survey was undertaken in 12 different areas of the total Bear River Bay complex, including the Bear River Refuge, Public Shooting P-48.71 (Continues next page)

[23] As of April 24, 2007, the level stood at 4197 feet. The level has been below 4198 feet for at least the last three years.

[24] *Avian Ecology of Great Salt Lake*, by Tom Aldrich and Don Paul from Great Salt Lake: An Overview of Change, edited by J. Wallace Gwynn, Ph.D., Special Publication of the Utah Department of Natural Resources, 2002.

Grounds, and Bear River Club. The surveys occurred numerous times from early spring through fall during these five years. The survey underscores the importance of Bear River Bay to waterbirds. A map of these survey areas is attached, along with some of the bird counts data.

■ As noted above, Bear River Bay is of critical importance to Canada geese, huge numbers of which use the area while molting. The Utah Division of Wildlife Resources has conducted aerial surveys of Canada Geese in June in the open water of Bear River Bay since 1972. The highest count was 11,893 in 1998. The impacts to these molting geese due to an expansion of the mineral ponds in Bear River Bay are not known. What is of concern is the reduction in habitat and also the potential decrease in available wet areas, particularly in lower water years. This reduction in habitat could result from direct loss to diked areas, as well as water quality impacts due to increased evaporation and reduced circulation. In addition, the Army Corps must consult and develop bird survey data regarding other breeding waterfowl, such as redhead and teal, that heavily use this area.	P-48.72
■ The discharge of dredged or fill material in Bear River Bay will likely adversely impact the fisheries in Willard Spur and the bay. This is because the planned project is likely to disrupt flow between the bay and the spur and may adversely impact water chemistry and water quality.	P-48.73
■ The discharge of dredged or fill material will likely adversely impact wildlife and habitat due to noise and increased access of predators and humans across dikes. Moreover, the use of these dikes by trucks and other equipment and the use of pumps, engines and other equipment generally will adversely impact wildlife by directly killing animals, by fragmenting habitat, by introducing noise and other disruptive conditions.	P-48.74
■ Any impact to wildlife habitat caused by the discharge and the conversion of relatively intact ecosystem into evaporation ponds is likely to be exacerbated by low water.	P-48.75
■ Adverse impacts to water quality and decreases in water quantity will adversely affect wildlife and wildlife habitat.	P-48.76

E. Subpart E

We note that in addition to wetlands, subpart E identifies mudflats as "Special Aquatic Sites." 40 C.F.R. § 230.41 (wetlands); 40 C.F.R. § 230.42 (mudflats). This further emphasizes the importance of both site types to protecting the waters of the United States, like Great Salt Lake. These regulations also underscore how vulnerable wetlands and mudflats are to discharges of dredge and fill material. These comments address many of the potential impacts to special aquatic sites that will result from the Great Salt Lake Minerals Proposal – both cumulatively and individually. In addition to those listed through out these comments, the Army Corps must address those applicable to the present proposal as identified in 40 C.F.R. § 230.31.	P-48.77

F. Conclusion

Thank you for your full consideration of the critical points we raise in these comments. Please do not hesitate to contact me with any questions or concerns regarding the issues

we raise herein. Moreover, if you have any difficulty gaining access to any of the materials we cite, please let me know and I will provide them for you. Also, we will send you, via U.S. Mail, a hard copy of these comments with all attachments.

Thank you for all you do to protect the waters of the United States and the aquatic communities, recreation and aesthetic values that depend upon them. Please keep us informed as to any further opportunity for public participation relative to the GSL Minerals Proposal and please send or email us all relevant documents and other materials. We also request that public hearings be held at every opportunity while you consider the planned project and that we receive notice of these hearings.

JORO WALKER
Director, Utah Office
Attorney for FRIENDS, et al.

P-49

Jason Gipson, Project Management
U.S. Army Corps of Engineers
533 West 2600 Sourth, Suite 150
Bountiful, Utah 84010
jason.a.gipson@usace.army.mil
VIA Email

Re: Public Comments Relative to Public Notice SPK-2007-00121

Dear Mr. Gipson,

Thank you for the opportunity to comment on the proposed Great Salt Lake Minerals expansion project to dike approximately 33,000 acres of lake bed and shoreline of the Great Salt Lake. As you know, the Great Salt Lake serves as a critical resource for millions of resident, migratory, and breeding birds each year. Its value to these populations can not be over stated and in fact, the Great Salt Lake's importance has been recognized by the US Shorebird Conservation Plan, The North American Waterbird Conservation Plan, and The North American Waterfowl Management Plan.

The current proposal by Great Salt Lake Minerals will result in the loss of more than 30,000 acres of Great Salt Lake and significantly impact thousands of additional acres of adjacent playa, shoreline, wet meadow wetland and upland sites. This loss and degradation of the landscape is problematic for the species that rely on Great Salt Lake. Natural landscapes within North America have been altered significantly and the wetlands, shorelines, and grasslands used by waterfowl, shorebirds and wading birds have been particularly disturbed, reduced and degraded (Brown et al. 2001, Kushlan et al. 2002, North American Waterfowl Management Plan 2004). Because of this loss and degradation, the populations of many waterbird species are in severe decline (Oring et al. 2003). This proposal to expand extraction operations by Great Salt Lake Minerals will further hasten declines of these species. P-49.01

Included below are my comments related to the proposed Great Salt Lake Minerals expansion as well as the draft Environmental Impact Statement (EIS).

1. The proposed expansion by Great Salt Lake Minerals will require the construction of a vast dike system. We know that mesopredator populations, such as raccoons, have increased dramatically within the last 50 years (Kamler et al. 2003). In addition, dikes within the Great Salt Lake ecosystem have been shown to serve as corridors for these mesopredators (Frey and Conover 2006a, 2006b); allowing them access to vast areas of wetlands which otherwise would have been difficult for them to reach. The EIS must take into account the effect of these dikes as corridors for mesopredators.

P-49.02

2. Consequently, the construction of these dikes may then function as "ecological traps" for many species, including Snowy Plovers. Snowy Plovers and other birds actively select dikes for the construction and placement of their nests. Additional dikes constructed for the proposed expansion may result in significant declines in productivity. For the past five years my research has focused on the breeding ecology and behavior of waterbirds at Great Salt Lake. We have amassed a dataset of 8,963 individual nest records from 18 species collected at seven study sites throughout the Great Salt

P-49.02 (Continuing)

Lake ecosystem. These data indicate that nest predation is the most important source of nest mortality (Cavitt 2006). In fact, nest predation in some locations is so high that no young are produced. Our data also demonstrate that nesting success of shorebirds declines within the vicinity of dikes. The effects of dikes can be observed reducing nesting success up to 250 meters away. Thus, construction of additional dikes will further function to impair breeding productivity of many species, including American Avocet, Black-necked Stilt and Snowy Plover. Throughout much of its range, Snowy Plover populations are declining (Page et al. 1991). The Pacific Coast population is designated as **Threatened** under the Endangered Species Act. Interior populations have also experienced significant declines (Page et al. 1991, 1995) and Snowy Plover have been given special status in many bird conservation programs. For example, they are considered **Highly Imperiled** by the US Shorebird Conservation Plan, a **Focal Species** by US Fish and Wildlife Service (USFWS) Division of Migratory Bird Management, are listed as a **Bird of Conservation Concern** by USFWS, a **Priority** species under the Great Basin Ecoregional Conservation Blueprint (The Nature Conservancy), and a **Priority** species under Utah/Wyoming Rocky Mountains Ecoregional Conservation Plan.

3. Within the draft EIS, the U.S. Army Corps of Engineers should use the term "habitat" as defined by wildlife biologists as "*the physical and biological resources required by an organism for its survival and reproduction; these requirements are species-specific*" (Bolen and Robinson 2003). In addition, when evaluating the proposed impacts on each species, the draft EIS should consider the impacts at scales appropriate for each species. The abundance, distribution and population health of wildlife are influenced by many factors operating at different spatial scales. Different habitat features may be relevant to a species at different scales of resolution from the local habitat patch to the entire landscape (Bissonette 1997). If the term "habitat" is simplified to incorporate only coarse-scale components of vegetation type (e.g. mudflat/pickleweed, emergent marsh etc.) and assumed to equate to suitable wildlife habitat, then erroneous conclusions will be made. It is widely known that the quality of the habitat patch is just as important as the vegetation type (e.g. Wiens et al. 1993). Therefore, it is incorrect to assume that the amount of available vegetation type available within the Great Salt Lake ecosystem is equivalent to the amount of suitable habitat available for species. Surveys of the distribution and abundance of birds utilizing the Great Salt Lake ecosystem indicate that populations are not evenly distributed throughout vegetation types. For example, Long-billed Curlew, a species designated as "highly imperiled" by both the US and Canadian Shorebird Conservation Plans and listed as a "species of conservation concern" by the US Fish and Wildlife Service (Oring 2003), commonly nests within uplands (pastures, salt desert scrub) and on mudflats. However, data from Paul and Manning (2002) indicate that this species is highly localized and **not** distributed evenly throughout the available uplands and mudflats within the Great Salt Lake ecosystem. In fact, this species reaches its highest abundance in only six sites surveyed. This same patchy distribution was also observed during a lakewide survey of Snowy Plover conducted during the 2007 breeding season. P-49.03

4. Finally, the U.S. Army Corps of Engineers should pay special attention to the impacts caused by the Great Salt Lake Minerals expansion on the breeding colony of American White Pelicans at Gunnison Island. Gunnison Island is only one of the seven remaining pelican rookeries in North America. It is estimated that this colony alone produces over 20% of the world's population of the American White Pelican, and is the only remaining major pelican rookery that does not have refuge status. This species is highly sensitive to disturbance at their breeding colonies (Johnson and Sloan 1976). Disturbance during the breeding season can result in colony desertion. The proximity of the colony to the Clymann Bay expansion site is troubling. The proposed expansion can jeopardize this colony by increasing human and mesopredator access, increasing noise and light disturbance, and concentrating gulls (a predator on pelican eggs and young) near the colony. In addition, the evaporation ponds may be used by flightless pelicans for roosting, increasing their risk of predation by predators. P-49.04

Again, thank you for the opportunity to provide scoping input on this important matter.

Sincerely

John F. Cavitt, Ph.D.
Associate Professor of Zoology
Department of Zoology,
Weber State University
Ogden, UT 84408-2505

signature on original copy mailed December 3, 2007

LITERATURE CITED

Cavitt, J.F. 2006. Productivity and foraging ecology of two-coexisting shorebird species breeding at Great Salt Lake, UT: 2005 - 2006 Report. Avian Ecology Laboratory Technical Report to Great Salt Lake Steering Committee. Weber State University, Ogden, UT. 38pp.

Bissonette, J. A. 1997. Scale-sensitive ecological properties: historical con/ext, current meaning. Pages 3-15 *in* J. A. Bissonette, editor. Wildlife and landscape ecology: effects of pattern and scale. Springer-Verlag, New York, New York, USA.

Bolen, E. and W. Robinson. 2003. Wildlife Ecology and Management. 5th edition. Prentice-Hall, New Jersey.

Brown, S. et al. 2001. United States Shorebird Conservation Plan. Manomet Center for Conservation Sciences, Manomet, Massachusetts.

Frey, S.N. and M.R. Conover. 2006a. Habitat use by meso-predators in a corridor environment. Journal of Wildlife Management 70:1111-1118.

Frey, S.N. and M.R. Conover. 2006b. Influence of population reduction on predator home range size and spatial overlap. Journal of Wildlife Management 71:303-309.

Johnson, R. F., Jr. and N. F. Sloan. 1976. The effects of human disturbance on the White Pelican colony at Chase Lake National Wildlife Refuge, North Dakota. Inland Bird Banding News 48: 163–170.

Kamler, J.F. et al. 2003. Range expansion of raccoons in western Utah and central Nevada. Western North American Naturalist 63:406-408.

Kushlan J. A, et al. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, version 1. Waterbird Conservation for the Americas, Washington, D.C.

Martinson et al. 2005. Coordinated Implementation Plan for Bird Conservation in Utah. Utah Steering Committee, Intermountain West Joint Venture.

Page et al. 1991. Distribution and abundance of the Snowy Plover on its western North American breeding grounds. Journal of Field Ornithology 62:245-255.

Page et al. 1995. Snowy Plover. In Birds of North America No. 154 (A. Poole and F. Gill, eds.) The Academy of Natural Sciences, Philadelphia, PA and The American Ornithologists' Union, Washington D.C.

Paton and Edwards 1992. Nesting ecology of the Snowy Plover at Great Salt Lake, Utah-1992 breeding season. Dept. Fish and Wildlife, Utah State University.

Paul, D. and A. Manning. 2002. Great Salt Lake Waterbird Survey: Five year report (1997-2001). Utah Division of Wildlife Resources Report.

Oring et al. 2003. National Shorebird Research Needs: A proposal for a national research program and example high priority research topics. Manomet Center for Conservation Science.

Oring, L. W., L. Neel, and K. E. Oring eds. 2005. Intermountain West Regional Shorebird Plan. Manomet Center for Conservation Sciences, Manomet, MA.

Wiens, J. A. et al. 1993. Ecological mechanisms and landscape ecology. Oikos 66:369-380.

P-50

Subject: FW: GSL Minerals Identification Number 200700121
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: cory cannon [mailto:triplecurl2003@yahoo.com]
Sent: Monday, December 03, 2007 5:32 PM
To: Gipson, Jason A SPK
Subject: GSL Minerals Identification Number 200700121

Comment Regarding Expansion of Great Salt Lake Minerals Identification Number 200700121

I am concerned that the expansion proposed by Great Salt Lake Minerals will have a negative impact on lake circulation, pelican and other nesting areas, plant habitat, and wildlife habitat. Circulation in the Great Salt Lake is already restricted by causeways, railways, and other existing construction. So the proposed construction of new dikes seems like it would only worsen the circulation problem. Also, returning what is leftover from the new evaporation ponds back into the lake seems disruptive to an already fragile ratio of minerals to water. The exact components in the waste flow may already be present in the lake, but not likely at the same concentrations. P-50.01 P-50.02

Human access is currently restricted in the proposed expansion areas, in addition to the areas being fairly remote. This lack of human interaction is a big advantage for the non-human residents of the Great Salt Lake in that there is less human disturbance to nesting areas, plant habitat, and wildlife habitat. P-50.03

Even though the proposed evaporation ponds are more environmentally friendly than burning fossil fuels to make a product, there is still an environmental cost in terms of habitat loss or damage and poor water circulation. Higher market demand for fertilizer is not a good reason when compared to the cost construction and operation would have on plants, birds, and other residents of the Great Salt Lake.
I think Great Salt Lake Minerals will continue to be profitable even if their expansion proposal is denied. This is not a circumstance where the business is on the verge of failure and hundreds of jobs will be lost unless the expansion is approved. They can continue operating with the lake resources they currently have. If they study the efficiency of their current operations, they may even become more profitable, without having any additional impact on the Great Salt Lake. P-50.04
I would hate to see additional stresses placed on Great Salt Lake birds and wildlife that would make them move somewhere else or endanger them. I would hate to see plant habitat or water health damaged by new construction or an influx of concentrated “post-evaporation pond” materials.
I think the environmental costs are too high for the expansion Great Salt Lake Minerals is proposing. I hope the environmental impact statement has the same finding.

-Brandy Cannon

P-51

Subject: FW: GSL Minerals Expansion Project
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Don S. Paul [mailto:avocet@qwest.net]
Sent: Monday, December 03, 2007 8:26 PM
To: Gipson, Jason A SPK
Cc: Joro Walker; Lynn de Freitas; Wayne Martinson
Subject: GSL Minerals Expansion Project

Dear Jason,

I have actively participated in the development of questions of interest to the proposed expansion of the Great Salt Lake Minerals evaporation and pre-concentration foot print in the North Arm and Bear River Bay portions of the GSL. I am in opposition to these expansions for numerous reasons that will be articulated by several significant organizations interested in the long-term sustainability of the GSL Ecosystem. I will not review my specific comments here; rather, I would like to make a few general comments concerning the seriousness and importance of this particular decision at hand. First allow me to point out for the record my qualification. I am a retired wildlife biologist after 34 years with the Utah Division of Wildlife Resources, most of which was spent working directly with GSL resource assessment, management and research. I ended my career with DWR as the GSL Avian Biologist working with the GSL Ecosystem Project. With my collogues, I collected the data that established GSL as a Hemispheric site within the Western Hemisphere Shorebird Reserve Network. We conducted 25 years of Gunnison Island American White Pelican breeding adult surveys, carried out an ambitious five year temporal and spatial aquatic bird survey within the GSL Ecosystem (1997-2001), and much more. I have recently been serving as the Great Basin Bird Conservation Region Coordinator as part of my Intermountain West Joint Venture responsibilities and in association with the North American Bird Conservation Initiative (NABCI). I serve on the Waterbird Conservation Council of the Americas. I provide you this personal background information only to legitimize the following facts and information.

The Great Salt Lake is the most important salt lake ecosystem and wetland complex as it relates to aquatic bird populations in North America and one of the most important in the Western Hemisphere. This fact is supported through the population size and percent of population of numerous species that migrate through the GSL, stage at the GSL (molt and gain weight in the form of energy for migration) or breed at the Lake. Not only is the GSL important because of its resources provided at key life-sustaining intervals and in impressive abundance, but its location is irreplaceable on the landscape as a strategic stop along the migratory pathway. Its size and contiguous habitats, in large part, are key in the support of the significant populations and P-51.01

P-51.01
(Continuing)

biodiversity that occur within the ecosystem.

This system has been compromised by decreasing water quantity, quality and time of availability and by the carving up of the Lake through the creation of dikes, levies and industrial complexes. The proposed expansion of GSL Mineral operations with the significant area requested and foot print location will significantly impact the lake's function and ecology. I would be happy to answer any further questions you may have concerning this project as they pertain to my knowledge of avian resources associated with the lake. Please contact me as needed.

Thanks,
Don

Don S Paul
AvianWest Inc.
5928 River View Circle
Mountain Green, Utah 84050
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avocet@qwest.net

P-52

Subject: FW: comments re: SPK-2007-00121
Date: Tue, 4 Dec 2007 08:31:58 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: comments re: SPK-2007-00121
Thread-Index: Acg1rbemckQO42ywTb+2m80XN3bZTgA5VlaA
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 04 Dec 2007 16:31:59.0602 (UTC) FILETIME=[31584520:01C83693]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 04 Dec 2007 09:32:01 -0700 (MST)
X-Spam-Status: No, score=-2.225, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_50_60,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
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From: Lynn Carroll [mailto:bradlynnc@comcast.net]
Sent: Monday, December 03, 2007 6:09 AM
To: Gipson, Jason A SPK
Subject: comments re: SPK-2007-00121

Jason Gipson, Project Management

Re: Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Evaporation Ponds on Great Salt Lake

Dear Mr. Gipson:

I welcome this opportunity to comment about the proposal by Great Salt Lake Minerals to form additional evaporation ponds in both the North Arm (Gunnison Bay) and Bear River Bay of Great Salt Lake (GSL). These comments reflect concerns that I and other members of Wasatch Audubon Society have about effects the expansion might have on the unique and complex ecosystem inhabiting the lake and its shores. Our primary interest is in preserving habitats and favorable conditions to maintain the biological diversity of Utah and the world. Since we know most about the birds found here, our comments will focus on them.

Through its pre-scoping meetings, the Corps has done a good job of identifying questions and concerns to be addressed in the DEIS. Most of our concerns fall within the categories listed in the Preliminary Information Packet provided at the public meetings in November, so I will assume familiarity with these ideas and proceed to address some from our point of view.

American White Pelicans

In the past, there were several nesting sites of American White Pelicans in Utah. Gunnison Island's status as the only remaining nesting colony in the state and one of the three largest colonies in North America magnifies its importance. Its loss would certainly impact the population of pelicans in the state and contribute to a general decline of the species.

It is difficult to know whether activity at the proposed Gunnison Bay expansion site would cause birds to abandon their nests. Certainly Gunnison Island has attributes pelicans value, since they must make long flights from there to reach fish on which to feed. One of those attributes is probably its solitude. Literature about the American White Pelican should be searched for information about their sensitivity to noise, vibration, and other disturbance at their nesting sites. While GSL Minerals states that the only activity at the new ponds would be for maintenance, I have been told that there is a lot of truck traffic at the existing Clyman Bay pond. Any information that can be found about why past nesting sites were abandoned would also be helpful in assessing the risk. P-52.01

Pelicans choose an island for their nests so that the surrounding water protects them from predators. When the lake level has been at its lowest, that protection was lost. We know that predators of water birds use dikes to approach their prey. Maps of the topography of the lake bottom, if available in enough detail, should help the Corps to predict whether the proposed dikes would increase predator access to the island at a certain lake level, or whether the intervening water would be deeper than the water the dikes cross. In developing any alternatives to the proposed project, consideration should be given to how Great Salt Lake Minerals might protect Gunnison Island from predators and human trespass. P-52.02

Snowy Plover

Use of a particular area by shorebirds depends directly on the water level as well as the availability of the invertebrates they feed on, so there is a lot of variability around GSL as conditions fluctuate. Therefore it is important when looking at potential habitat loss to examine data about prior use at a number of different times, from historic low to historic high water years. If surveys from such a range of times aren't available, surveys of similar mud flats at various elevations in the present must suffice. Snowy Plovers are a state species of concern, and potential loss of nesting habitat concerns us greatly. P-52.03

Gunnison Bay use by other wildlife

Under the current condition of high salinity, the productivity of the north arm of GSL is low. However, when wet years lower the salinity, more organisms can survive and reproduce there. In particular, Gunnison Bay becomes good brine shrimp habitat and thus important habitat for animals that depend on the shrimp. Such has been the case for Eared Grebes, which require plentiful shrimp at this stopover on their long fall migration. The same would happen if there were much better mixing of the waters of the north and south arms. So again, the Corps must not depend on current use data to judge whether important habitat would be lost through the proposed project. P-52.04

Heavy Metals

Possible increased movement of mercury or other heavy metals into the food chain is another area of great concern and too little knowledge. I presume that mercury contamination that GSL Minerals harvests with the sodium and potassium salts is separated and returned to the lake on the east side. I hope that the effect on lake concentration of mercury would be tiny, but if changes in the chemistry of the lake water make the metals more available to plants and animals, it is very serious. This must be carefully investigated, starting with the current operations of GSL Minerals. P-52.05

Bear River Bay

While much of the foregoing discussion involves threats that *might* be significant, we have no doubt that

the current east-side dikes and industrial operation *have had* significant detrimental impacts on the ecology of that part of GSL. The proposed Bear River Bay expansion would have an additional impact out of proportion to its size, because the size and diversity of available habitats has already shrunk so much. P-52.06

The Bear River Bay is a biologically productive and diverse area because of the addition of fresh water, which permits growth of typical wetland species. In addition, the gradient from fresh to salt water and the gradual change in water depth provide additional niches for more species to thrive in. These constitute a "special aquatic feature" that must be protected. Please take very seriously concerns expressed by the Utah Division of Wildlife Resources and other biologists about wildlife impacts of the expansion, including impacts on geese and other water birds. P-52.07

Simply examining the map of the Bear River Bay expansion is enough to raise concern that the hydrology of the lake will be seriously impacted. We urge the Corps to consult experts regarding the likely effects of the proposed evaporation pond on GSL hydrology and how these might impact the values the Corps is charged with protecting. P-52.08

We believe that the cumulative environmental impacts on Bear River Bay are great enough that the Corps should deny the permit for this expansion. P-52.09

Air quality
Additional evaporation ponds imply additional harvesting activity. We are concerned that this will increase the particulates in the air where we live and breathe as well as in the bird habitat on and near the lake. P-52.10

Recreation
Wasatch Audubon Society activities include frequent bird watching field trips, which often take us to Great Salt Lake. Any decrease in the use of GSL by birds would decrease our enjoyment of this wonderful pastime. P-52.11

Thank you for considering and using these comments as you prepare the Draft Environmental Impact Statement for the solar pond expansion.

Sincerely,

Lynn Carroll
Wasatch Audubon Society Conservation Chair

P.S. The text above is the same as that contained in the attachment. A print copy will be sent by U.S. mail as well.

The Nature Conservancy
Protecting nature. Preserving life.™

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tel [801] 531-0999
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December 3, 2007

Jason Gipson, Project Management
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Jason.a.gipson@usace.army.mil

Re: Comments on important scoping issues relative to Public Notice SPK-2007-00121 – Proposed 33,000-acre Expansion of Solar Ponds on the Great Salt Lake (Great Salt Lake Minerals).

Dear Jason:

On behalf of The Nature Conservancy, I want to thank you for the opportunity to comment on the proposed action to dike approximately 33,000 acres of lake bed and shoreline habitat by Great Salt Lake Minerals in two locations on the Great Salt Lake. It is an issue of great importance to the continued survivability of the Great Salt Lake as a functioning ecosystem and we believe that a number of issues need to be addressed in a clear, sufficient and scientific manner before a project of this scale and permanence is approved by your agency.

Background

The Nature Conservancy is an international, non-profit conservation organization created in the 1950's that has been working on conservation projects in Utah since 1983. Our mission is "to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive." Utah's rich biodiversity status (5th among all states according to our scientists) has made our work here both satisfying and especially compelling.

The Nature Conservancy has long recognized the Great Salt Lake Ecosystem as likely the most important and biodiverse natural system remaining in Utah, and has been working for preservation of the Great Salt Lake since 1983. One of our most visible efforts has been the purchase and establishment of the Great Salt Lake Shorelands Preserve in Davis County. This 4,000+ acre protected area captures 11 miles of shoreline wetlands and uplands, and provides migratory and nesting habitat for thousands of birds of dozens of avian species. The recently-completed Visitors Center, which includes a mile of boardwalk and a 30-foot

viewing tower, provides access to and on-the-ground experience with the Great Salt Lake system for thousands of Utah citizens each year.

For many years, The Nature Conservancy felt that consolidating the protection of wetlands and associated uplands in this area of the Great Salt Lake was the principle contribution our organization could make to Great Salt Lake conservation. Seven or eight years ago, however, our science and program staff began to realize that while the preservation of significant wetland habitat could successfully occur, the Great Salt Lake might still be at serious risk of moving beyond the threshold of sustainability. The Conservancy then began a process of analysis and planning that revealed threats to the larger Great Salt Lake system that could possibly render all the past good conservation work by all parties futile. The components to the lake's natural, healthy-functioning system that are clearly at risk include: lake level fluctuation, salinity balance, water circulation, water quality and water quantity. Because the proposed Great Salt Lake Minerals action would have an effect on Great Salt Lake health *at the systems level*, we believe the Corps and other agencies with statutory and regulatory authority for the maintenance of this great natural system must move forward only after conclusive scientific evidence that no harm will occur.

The Value of the Great Salt Lake

Certainly, the Great Salt Lake is a unique, important and growing area of interest for many Utah citizens (sailing, airboating, hunting, wildlife viewing, horseback riding, mountain biking, hiking, mineral extraction, brine shrimp harvest, and other activities). P-53.01

Looking at it through the lens of biodiversity, one can only conclude that the Great Salt Lake is a natural (and national) treasure. Not only does it provide a variety of uses for Utah citizens, but it has significance above and beyond our state. Because Utahns have the responsibility of managing this resource, we must recognize that "our" lake is a critical site in a hemispheric network of migratory wetland areas. We have obligations to other countries in South and Central America, to Mexico, Canada and to the millions of migratory birds that visit one country after another in their annual patterns to keep the Great Salt Lake a permanent, sustainably-functioning "link" in the chain of migratory stopovers.

Describing the wildlife of the lake is an exercise in superlatives and astounding numbers. Between 2 and 5 million shorebirds and roughly 4 million waterfowl depend on Great Salt Lake wetlands and habitat annually. In all, over 250 avian species rely on the Great Salt Lake system's healthy functioning – a system that includes the vast majority of all Utah's rare wetland habitat (approximately 400,000 acres). Recognized for its world-class wildlife numbers, the lake is officially designated a Western Hemispheric Shorebird Reserve Network site.

Both the North Arm of the Great Salt Lake and the Willard Spur areas have high wildlife values – hosting millions of birds during fall migration and containing key habitat for waterfowl and shorebirds at all lake levels. In addition to habitat values existing currently in the North Arm (one being the occurrence of the important population of breeding White Pelicans on Gunnison Island producing 20% of the world's population), this changeable

lake area can support brine shrimp production at higher lake levels. The birds that follow this food source (Wilson's Phalaropes, Red-necked Phalaropes, and Eared Grebes) are critically dependent on this function when it occurs. Likewise, the Willard Spur area has extremely high wildlife values. Especially during low water years, the bulrush habitat in the area supports large numbers of colony nesting birds and foraging migrants. Any development proposal to these valuable wetland, shoreline and lake bed areas needs to be taken seriously, but the potential environmental impacts for a proposal of this astounding size and impact require especially thorough analysis.

The Great Salt Lake Minerals Proposal

In its scope and scale, this proposal ranks as one of the most potentially system-altering proposals for lake development in our generation. The permanent diking and sequestering of 33,000 acres of lake shoreland and lake bed into shallow, single-use evaporation ponds will not only totally destroy the existing function of the public land and water under its footprint, but will also likely influence the use of tens of thousands of other acres as its impacts radiate out into the lake aquatic ecosystem. For a project of this importance and size, all permitting agencies should conduct exhaustive analysis of all possible scenarios and impacts in order to protect the lands and waters held in trust for the people of Utah and the nation. We are not aware that this has occurred and outline below some key questions and areas of study that we advocate be undertaken by the Corps as they consider this permit application.

Issues That Should Be Addressed Relative to the Specific Proposal

Wildlife/Habitat/Wetlands Issues

1) A collection of existing (or the initiation of new) monitoring studies such as the Great Salt Lake Waterbird Survey, to afford a systematic evaluation of all avian use of the project areas and the importance of these areas to lakewide wildlife populations. Use this information to determination project impacts to wildlife.	P-53.02
2) An analysis of studies or literature on the impacts of constructed dikes on nesting and foraging bird habitat	P-53.03
3) The effects of noise, new roads and other infrastructure and increased pathways for predator access to avian nesting areas	P-53.04
4) A determination of the impact to aquatic organisms both to brine shrimp industry and to wildlife in the biological food chain	P-53.05
5) An analysis and determination of all potential impacts to the important White Pelican breeding population on Gunnison Island (enhanced human and predator access by dike, dust, noise/light impacts, dike/pond attraction to young pelicans and gull and mammalian predators, among others)	P-53.06
6) The impact of losing up to 7 miles of shoreline breeding habitat for sensitive bird species such as the Snowy Plover.	P-53.07
7) The need to use current and accurate maps to determine a present-day impact as well as what is projected based on past lake rise and fall	P-53.08
8) The impact of the project on hydrologic patterns in the affected area	P-53.09
9) An analysis of habitat importance and loss/gain during years of lake level fluctuation	P-53.10
10) An analysis of the loss of wetlands surrounding the Great Salt Lake to date and how this proposal may affect avian populations	P-53.11

11) An analysis of projected bird use of new ponds and the negative or positive impact of that use	P-53.12

Issues That Should Be Addressed Relative to the Integrity and Sustainability of the Larger Great Salt Lake Ecosystem

Water Quality/Water Chemistry

1) We know that human activities can have serious impacts on water quality – not only of the lake's tributaries, but of the aquatic lake body itself. For instance, the North Arm's water chemistry has changed drastically since the construction of the northern causeway. We know now as well that some of the highest mercury levels ever recorded in a U.S. waterbody were documented recently in the waters of the Great Salt Lake. The State of Utah is currently conducting the scientific studies necessary to establish a numeric standard for selenium discharge and permissible occurrence levels within the body of the lake. How will this project affect water quality and water chemistry – and secondarily its impact to organisms within the lake and its wetlands and the wildlife that consumes them? P-53.13

2) How will this proposal affect the water quality in the North Arm? Is it in compliance with the narrative water quality standards established by the state for the lake?	P-53.14
3) Will reduction in Bear River Bay system acres by the diked ponds affect circulation, nutrient cycling or interrupt water flows – possibly affecting water quality?	P-53.15
4) As the evaporative ponds concentrate minerals, will they concentrate contaminants and pollutants as well? Will these be returned to the lake system?	P-53.16
5) Will the construction of the dikes themselves contribute to water quality degradation? How will this be quantified?	P-53.17
6) Construction of dikes will undoubtedly disturb lake sediment layers, likely re-suspending chemical and contaminant components (selenium, mercury) into the water column. What will this mean to water quality, to wildlife and the entire aquatic ecosystem?	P-53.18

Water Quantity

1) A determination of the effects of major new evaporation surfaces and the removal of large amounts of water itself from the larger lake system	P-53.19
2) How will the loss of lake water evaporated be quantified? How will any remaining residue be sequestered or returned to the lake and how will that affect North Arm and whole-lake chemistry?	P-53.20

Lake Level Fluctuation

1) At the proposed locations, these structures will be vulnerable to the effects of wind and water at higher lake levels. Will GSL Minerals push the state to defend these structures? "Turning on" the West Desert pumps in order to defend evaporation ponds could have major effects on the natural lake level fluctuation (important to habitat vegetation cycles) as well as move vast amounts of salts and water out of the GSL system. What effect would this have?	P-53.21

2) The Great Salt Lake is a dynamic system – how will changing water levels and the effects of drought affect water quality, quantity, salinity balance and wetland and open water habitat with these new facilities in place? P-53.22

Salinity Balance/Water Circulation Patterns

1) An analysis of how the proposed development will affect natural lake currents and circulation – especially in the Bear River Bay area P-53.23

2) Study and impacts of how the proposed structures will further affect salinity balance in the north arm and in the lake body itself, including maintenance work and flushing of new diked ponds P-53.24

The Over-arching Issue of Cumulative Impacts on Decision-Making

Of critical importance to making an informed decision concerning this proposal (and all development proposals concerning the Great Salt Lake ecosystem) is **an understanding of the cumulative effect of this action when added to other lake-altering activities**. This key piece of information has not been provided, but should be analyzed – otherwise the Corps cannot be sure that lake system functions and other legal uses are sustainable. It is essential to proper protection and maintenance of the lake's aquatic ecosystem that some analysis and sustainable level be identified for all combined mineral extraction activities lakewide. Going one step further, it is also imperative that an analysis be done on this action when it is combined with other likely development or lake alteration actions, as often past actions can combine with present-day decisions to compound degradation of the lake system and its public trust values.

A case in point is the northern causeway. One of the most significant lake-altering actions taken since settlement, the permitting and construction of this causeway has drastically altered the natural functioning of the Great Salt Lake. In the "North Arm", all the ecosystem-scale functions of the lake have been disturbed and degraded: lake circulation, salinity balance, water quality, water quantity and lake level fluctuation. Brine shrimp production and the natural lake plankton ecosystem were terminated. Only at extremely high water levels does the north arm begin to function in a biological fashion similar to that of the larger lake. What will the current proposal do to further degrade or enhance the situation for all legal uses of the North Arm water body? P-53.25

Because today's planning and analysis protocol considers current proposals as stand-alone, the citizens of Utah will only know when some cumulative threshold of sustainability will have been crossed when we witness the negative consequences on the ground and in the water. It only makes sense to identify sustainable limits for all lake uses and to analyze their cumulative impact on each other and we recommend that you consider the following in your analysis:

1) An analysis of how this proposal, when combined with current proposals in the same area (oil and gas leasing in the North Arm, for instance) might cumulatively affect wetland and aquatic ecosystems

P-53.25 (Continuing)

2) An analysis of the permanent removal of shoreline and lake bed habitat and its cumulative impact when combined with the already-diked mineral removal or evaporation ponds elsewhere on the lake. If this proposal alone will give single-use control of a total of roughly 10% of the entire lake's area at most water stages, what do the other operations capture and what are the combined effects on wildlife, wetlands and the aquatic ecosystem?
3) An analysis of how much these two project areas have been altered already and how much they deviate or already have lost their wetland and aquatic ecosystem characteristics (from previous mineral diking, the construction of the northern causeway, and other wetland loss from development in the area), and how much further the proposal will take this huge area of the lake away from properly-functioning conditions.

Two final points:

1) The disturbance of natural values under this proposal of development is immense. Should the project go forward, how could it be mitigated at this scale? What kind of mitigation for this permanent loss would be considered? Where could it take place at the scale required? P-53.26

2) The proposal as submitted does not seem to address other reasonable alternatives – when a clear alternative exists to place the evaporative ponds in the North Arm, at least, entirely out of the lakebed and shoreline habitat areas. P-53.27

Again, The Nature Conservancy appreciates this opportunity to provide scoping input and we wish you the best in your future deliberations.

Sincerely,

Dave Livermore
Utah State Director
The Nature Conservancy
(Signature on original hard copy mailed 12/3/07)

CC: Dick Buehler, Forestry, Fire and State Lands
Maunsel Pearce, Great Salt Lake Alliance
Joro Walker, Western Resource Advocates
Lynn de Freitas, FRIENDS of Great Salt Lake
Ella Sorensen, National Audubon Society
Wayne Martinson, National Audubon Society
Amy Defreese, Utah Rivers Council
Ann O' Connell
Jack Ray
Jeff McCreary
Cullen Battle
Bob Adler
Nathan Darnall

Jeff Richards
Bill Fenimore
Tim Brown
Don Paul
Nancy Keate
John Cavitt
Dave Naftz
Brian Dixon

P-54

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Thu, 6 Dec 2007 06:27:06 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: Acg3rGgLsD+9jcfdTxKx7D4/YsDmfQAZ6jMw
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 06 Dec 2007 14:27:08.0602 (UTC) FILETIME=[152FE1A0:01C83814]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Thu, 06 Dec 2007 07:27:09 -0700 (MST)
X-Spam-Status: No, score=-2.022, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_40_50,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: kevinsmith3206@comcast.net [mailto:kevinsmith3206@comcast.net]
Sent: Wednesday, December 05, 2007 7:05 PM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

Dear Jason,
I'm writing in support of the expansion project proposed by GSL. I am currently employed by GSL and proud to state that! I've been with them for 27 years. I came to GSL as an out of work brick layer with nothing to offer them but fear of failing to be able to support my family. I worked as a laborer. Hard work and desire opened oppertunities for me to advance into operating areas of the plant much sooner than I could have anticipated in my wildest dreams!
Myself and many of my peers have been niching out a reasonbly good living while still working to be good stewards of the Lake. We know that's where our livlihoods come from, who really cares more about protecting it? We do! P-54.01
I've been witness to a growth in demand for our products that exceed what our current facility can keep up with.
I encourage you to support us as well.
Thank You!
Kevin M. Smith

P-55

Subject: FW: GSL Minerals Expansion
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Shauna Meacham [mailto:smeacham01@gmail.com]
Sent: Wednesday, December 05, 2007 9:58 PM
To: Gipson, Jason A SPK
Subject: GSL Minerals Expansion

I understand that the Army Corp of Eng is collecting comments on the pond expansion of GSL Minerals. I wanted to express my opinion, that I am in complete favor of the expansion. I have reviewed the plans, and I have attended one of the public open forums. I do not believe there is a wet land issue, with the expansion. I also do not believe it will adversely affect any water fowl or migratory birds in the area. Please pass these comments along. Thanks. P-55.01

P-56

Subject: FW: GSL Expansion Permit Public Comment
Date: Thu, 6 Dec 2007 07:21:01 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment
Thread-Index: Acg4G3PkF5owUl1sR2yPAlNWC23oGgAACPNg
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 06 Dec 2007 15:21:02.0404 (UTC) FILETIME=[9CAEE840:01C8381B]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Thu, 06 Dec 2007 08:21:03 -0700 (MST)
X-Spam-Status: No, score=-2.188, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_50_60,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Laufenberg Feed & Ag [mailto:lfas@mhtc.net]
Sent: Thursday, December 06, 2007 8:20 PM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment

Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Re: GSL Expansion Permit Public Comment

We ask that you consider granting Great Salt Lake Minerals permits to expand their solar evaporation ponds to increase production of organic potassium sulfate fertilizer, which is used to product vegetables, fruits and tree nuts.

Worldwide demand for all fertilizers, including potassium fertilizers, is growing at an annual rate of 2 percent to 3 percent. According to industry experts, current worldwide demand for potassium fertilizers exceeds the industry's capacity by an estimated 1.3 million tons. P-56.01

Additional organic fertilizer will help meet the increasing worldwide need for sustainable food supplies.

Thank you,
Dave Laufenberg
United Suppliers

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Thu, 6 Dec 2007 15:30:26 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: Acg4QMbGlWer/pvURlmJIX+U+9spjwAHzE7g
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>
X-OriginalArrivalTime: 06 Dec 2007 23:30:27.0718 (UTC) FILETIME=[FBC63A60:01C8385F]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Thu, 06 Dec 2007 16:30:42 -0700 (MST)
X-Spam-Status: No, score=-2.256, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

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Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Bob McNaughton [mailto:bmcnaughton@sylvite.ca]
Sent: Thursday, December 06, 2007 12:47 PM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

Mr. Gibson : I am writing to you in support of GSL's expansion. As Sylvite we own a fertilizer sales and distribution business in Lakeland Florida. Within Florida the demand for 'sulfate of potash' is very high as it offers the best source of chlorine free potassium for the growth and development of citrus and vegetable crops; in fact it is the only source. We have seen and continue to see the demand for this naturally occurring, environmentally friendly product grow in demand and popularity in other markets such as golf course fertilizers and home consumer products as well. Unfortunately we have also seen the need to import the product from other sources grow along with this demand. Some of those global manufacturers are found in Germany,Belgium,Chile and China. Most of these sources offer a manufactured product rather than a natural organic product such as that of GSL's . We feel that this expansion project will allow us to continue to offer the farmer/rancher in Florida a quality product that will environmentally benefit the state of Florida and meet their growing demand with a made in America solution. In today's world it seems much too often that we do not have those opportunities. P-57.01

Mr. Gibson I know that there are a number of other positive's around this project from job creation thru to financial. However being in the industry of growing food where the need for good,clean.safe crop inputs is growing and the world wide demand for food and food safety is demanding ; as it should ; that we offer only the best; grown by the best means possible ; than GSL product helps us attain that goal for all American's.

Mr. Gibson if you have any question's of me or require any further clarification on any statements which I made please feel free to contact me.

Respectfully Yours;

Bob McNaughton
President
Sylvite Terminal & Distribution
1607 West Olive Street
Lakeland , Fl
33815 phone; 519 670 3521

P-58

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Thu, 6 Dec 2007 07:11:36 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: Acg4FzQvdDjW3Mq4TAKICxzyCU9VFAAAxQBw
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>
X-OriginalArrivalTime: 06 Dec 2007 15:11:40.0177 (UTC) FILETIME=[4D91E010:01C8381A]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Thu, 06 Dec 2007 08:11:41 -0700 (MST)
X-Spam-Status: No, score=-1.218, required=5
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X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

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Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Gary Marsh [mailto:garmar@milesnmore.com]
Sent: Thursday, December 06, 2007 7:49 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

Dear sir,

North American agriculture needs this expansion. I'm sure you have seen the numbers, world demand is still on the rise and projected to keep increasing each year. Great Salt Lake is the only North American producer that can supply us Potassium Sulfate for our "Value Added" crops here in Kentucky. Other suppliers, mainly Germans, have reduced tons to this market due to international demand and currently due to the weak value of the U.S. dollar, i.e. better margins elsewhere, thus putting increasing pressure on Great Salt Lake to supply this market. Value added products provide a big boost to the Kentucky and overall US economy and this product is needed to maximize results. Globally the demand for organic food is on the rise and this expansion will enable that demand to be met and help provide a sustainable supply in the global food chain. GSL and the world needs this expansion. P-58.01

Regards,

GARY MARSH
MILES FARM SUPPLY, LLC
270-852-7887
garmar@milesnmore.com

P-59

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Thu, 6 Dec 2007 15:40:45 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: Acg4JSvRjFRMo253R2+P+6i10dhAJgAPDn1w
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>
X-OriginalArrivalTime: 06 Dec 2007 23:40:46.0335 (UTC) FILETIME=[6C7FB0F0:01C83861]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Thu, 06 Dec 2007 16:40:47 -0700 (MST)
X-Spam-Status: No, score=-2.259, required=5
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Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: John Duke [mailto:jduke@ourcoop.com]
Sent: Thursday, December 06, 2007 9:29 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

I am writing in regard to the expansion project being done by Great Salt Lake Minerals Company (GSL). This project will greatly benefit our growers in Tennessee. The product, potassium sulfate, which will be produced by this expansion, is use on a variety of crops grown in Tennessee. It has always been a struggle being able to procure enough of this product to supply our growers. We have had to deal with importers from other countries to supply part of our needs when the domestic material was tight on product. This has not been a dependable source. With the expansion at GSL this should insure a dependable supply of potassium sulfate for our growers. We asked that you please allow GSL to have the proper Construction Permits to begin this project. P-59.01

Thank you.

John Duke
Fertilizer Program Manager
Tennessee Farmers Cooperative
180 Old Nashville Hwy
Lavergne, TN 37086
(615)793-8355

P-60

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Thu, 6 Dec 2007 07:17:46 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: Acg4Gvi9Xwb/eSX+SrWT2RMbMf/LYQAAC0QA
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 06 Dec 2007 15:17:48.0110 (UTC) FILETIME=[28DFFEE0:01C8381B]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Thu, 06 Dec 2007 08:17:49 -0700 (MST)
X-Spam-Status: No, score=-2.253, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

"urn:schemas-microsoft-com:office:office" xmlns:w = "urn:schemas-microsoft-com:office:word">

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Pat Simonich [mailto:simonichp@compassminerals.com]
Sent: Thursday, December 06, 2007 8:18 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

Mr. Gipson,

I would like to contribute some positive comments about GSL's current request for expansion of our pond systems. I have been an employee of GSL for almost 30 years, and over these years, I have had the opportunity to work in many different capacities from starting out as an operator in the potash plant, to an electrician, served in multiple levels of supervision, and finally, I'm currently an Information Technology manager. What I have always been proud of is we as a company have been able to survive some pretty tough times such as the floods in 1983-84 and also been able to grow our business without affecting our delicate environmental surroundings. I feel this new project would be a continuation of our company's dedication to act in a responsible and protective manner with regards to our environment, and at the same time, bring economic growth to our community. P-60.01

Sincerely,

Patrick Simonich
Information Technology Manager – Applications and Development
Compass Minerals
801.732.3321

P-61

Subject: FW: GSL Expansion Permit Public Submission
Date: Fri, 7 Dec 2007 07:33:47 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Submission
Thread-Index: Acg4zL6jIWxUevQGQ5CaweSBm92wcwAGc16Q
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 07 Dec 2007 15:33:48.0361 (UTC) FILETIME=[8FA46B90:01C838E6]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Fri, 07 Dec 2007 08:33:49 -0700 (MST)
X-Spam-Status: No, score=-2.194, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_50_60,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: LAT VARN [mailto:latvarn@gmail.com]
Sent: Friday, December 07, 2007 5:29 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Submission

Dear Mr Gipson,

As a fertilizer retailer in the Eastern half of the USA, I want to let you know that we need more Sulfate of Potash. I have worked with GSL for many years and even visited their facility, both for a ground tour and a fly-over tour. From what I saw, I vote for you to allow them to expand their operations, to allow for more supply. Our comapny will use the material for food, fiber, turf, ornamental, and homeowner needs. P-61.01

Thanks again for what you do.

Sincerely,

Lat Varn
Director of Operations
Harrells Fertilizer

The Fertilizer Institute

Nourish, Replenish, Grow

William C. Herz
Vice President,
Scientific Programs

P-62

December 7, 2007

VIA Electronic Delivery

Mr. Jason Gipson
Project Manager
U.S. Army Corps of Engineers
Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

Re: ***Public Notice SPK-2007-00121***

Dear Mr. Gipson:

The Fertilizer Institute (TFI), on behalf of its member companies, submits these comments in response to the Corps of Engineers' Notice of Intent entitled *Intent to Prepare a Draft Environmental Impact Statement for Great Salt Lake Minerals Corporation's Solar Evaporation Pond Expansion Project within the Great Salt Lake, Box Elder County, Utah* (hereinafter referred to as "Notice of Intent"). This Notice of Intent was published in the *Federal Register* on Nov. 1 (72 Fed. Reg. 61,871).

Statement of Interest

TFI represents the nation's fertilizer industry including producers, importers, retailers, wholesalers and companies that provide services to the fertilizer industry. Its membership is served by a full-time Washington, DC, staff in various legislative, educational and technical areas as well as with information and public relations programs.

Great Salt Lake Mineral Corporation (GSL Minerals) is a member of TFI thus, TFI and its members have a substantial interest in the Corps of Engineers' Notice of Intent and preparation of a draft Environmental Impact Statement for the proposed GSL Minerals Solar Evaporation Ponds Expansion Project.

TFI Comments

TFI supports and incorporates by reference the comments submitted by GSL Minerals. Further, TFI offers the following additional comments on the Notice of Intent.

As the Corps is aware, GSL Minerals is proposing to add approximately 33,000 acres of solar evaporative ponds to its existing 43,000 acres operation on the east and west shores of the Great Salt Lake. Using its existing process, GSL Minerals will continue, after the expansion, to extract naturally-occurring brine from the Great Salt Lake and allow the brine solution to dry and

P-62.01

P-62.01 (Continuing)

produce sulfate of potash. The existing production process, as well as the proposed expansion, is best viewed as an environmentally friendly and sustainable extraction process. There are no hazardous chemicals used in the production process and no hazardous wastes are generated by the process. GSL Minerals proposes to implement its expansion in a responsible manner with a commitment to limiting the environmental impact, just as it has done over the past 40 years.

In addition, there is an economic benefit associated with the contemplated expansion. GSL Minerals estimates that the expansion will provide an additional 50 jobs and that tax and royalty payments to the State of Utah will increase by an estimated $5 million per year.

World Potash Demand P-62.02

TFI would like to point out that the current forecasts regarding potash (K_2O) show that worldwide demand will increase 23 percent during the five year period of cropping years 2005/06 through 2010/11. This translates to at minimum 4 percent demand growth in each of the next five years. In 2006 there was an unexpected reduction of potash supply, and world potash production declined by more than 9 per cent to about 50 million metric tons.[1]

There are only twelve countries that produce potash. Of these countries, only China and Canada increased their capacity in 2006. In 2007, global capacity will expand marginally but the loss of a major mine in Russia will further tighten the global supply in the short term. Therefore, the proposed GSL expansion will also help to reduce the critical potash shortage. Potash fertilizers, in general, and sulfate of potash fertilizers, in particular, are in very high demand. According to industry experts, current worldwide demand for potassium fertilizers exceeds the industry's production capacity by an estimated 1.3 million tons.

The type of specific potash fertilizer produced by GSL Minerals, sulfate of potash, is very beneficial to a number of crops, including vegetables, fruits and tree nuts. Notably, unlike the more common type of potash fertilizer, muriate of potash, potassium sulfate does not contain chlorides which can be detrimental to the root systems of many food crops. Finally, the organic potash that Great Lakes produces is highly sought after for the organic food production market. There are extremely limited sources of organic potash and demand exceeds supply by an even larger amount than the figures cited above.

North American Crops Typically Require Annual Potash Fertilization P-62.03

North American agricultural land requires typically require annual addition of potash to meet crop removal demands.[2] Testing of North American soils indicates that 39 percent of the summary samples show that potash fertilizer should be applied each year to avoid profit loss by most major crops (Figure 1, see Appendix). If a typical build-maintenance soil fertility program is being followed, 52 percent of the samples indicated a potash rate of at least crop removal is needed (Figure 2, see appendix).

[1] http://www.fertilizer.org/ifa/publicat/PDF/2006_council_buenos_aires_ifa_summary.pdf

[2] http://www.ipni.net/ipniweb/portal.nsf/0/20DEE100DAA86F668525727300746DF5

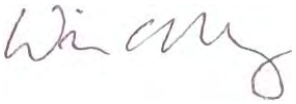
Potassium needs for crops are typically site and crop specific. Annual potash addition is most often needed in the Southeast and least often needed in the central Great Plains. Nebraska shows the lowest frequency of annual need at 7 percent, while Georgia shows the highest frequency of 77 percent. These regional differences are due primarily to indigenous soil properties. The central Great Plains and much of western North America generally have high potash levels in soils due to the prevailing climate and dominance of soils that have developed from high potash parent materials. However, even in these regions crop removal over several decades with limited nutrient addition is significantly depleting soil potash levels.

Conclusion

In sum, TFI supports the proposed GSL Minerals proposed expansion of its activities at the Great Salt Lake in light of (1) the minimal environmental footprint of the operations, (2) the fact that no hazardous chemicals are used or generated by the process, (3) that domestic and worldwide demand and agronomic necessity are such that this expansion is critical to national and global agricultural production (4) the increase in employment and tax/royalty payments to the State of Utah resulting from the expansion, and (5) the additional expansion helping to off-set the current critical, and anticipated future, shortage of potash fertilizers, in general, and sulfate of potash fertilizers, in particular.

Should you have any questions regarding our comments, please call me at (202) 515-2706, or e-mail me at wcherz@tfi.org.

Sincerely yours,



William C. Herz
Vice President, Scientific Programs

Appendix

Figure 1: Percent Of Soil Samples Requiring Annual K Addition To Avoid Profit Loss In Most Major Crops In 2005 (credit: International Plant Nutrition Institute, www.ipni.org)

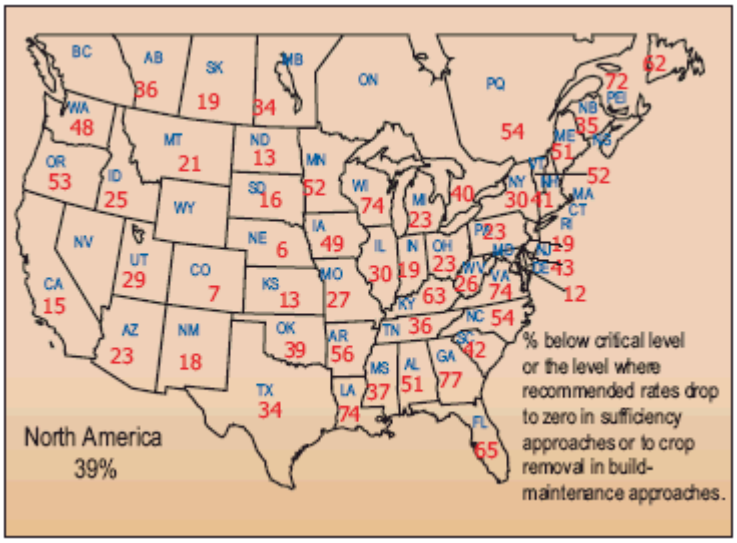
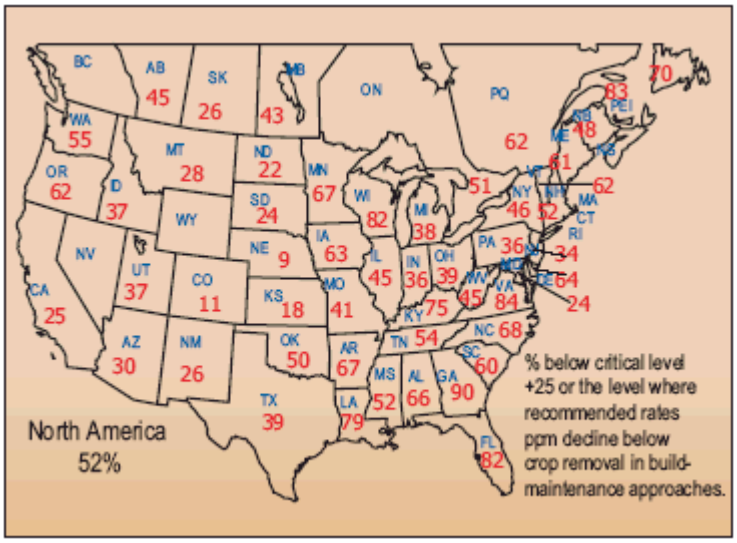


Figure 2: Percent Of Soil Samples Requiring a K Rate at Least the Amount of Crop Removal (credit: International Plant Nutrition Institute, www.ipni.org)



P-63

Subject: FW: Great Salt Lake Muinerals pond Expansion
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: rleeboyle@comcast.net [mailto:rleeboyle@comcast.net]
Sent: Sunday, December 09, 2007 12:22 PM
To: Gipson, Jason A SPK
Subject: FW: Great Salt Lake Muinerals pond Expansion

Dear Mr. Gipson:

I am writing regarding Great Salt Lake Minerals Corporation proposal to expand on its ponds. I am environmentally minded and do not see this proposal as having substantial adverse impacts to the environment.

The intent behind this effort is to produce more organic fertilizer that could lead to more ability to produce crops related to bio-fuels. This particular fertilizer also produces very high yield in crops that feed the increasing demand for food in the world. I have been out to the proposed area and do not see negative impact to wild life. A few duck hunters may be a bit inconvenienced which is okay by me. P-63.01

There are too many other real threats to the environment, like urban sprawl, that have no benefits in feeding the world, creating jobs and maybe helping push alternative to fossil fuels. Thank you.

Bob Boyle

P-64

Subject: FW: GSL Expansion Permit Public Comment Submission
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>

"urn:schemas-microsoft-com:office:office" xmlns:w = "urn:schemas-microsoft-com:office:word" xmlns:st1 = "urn:schemas-microsoft-com:office:smarttags">

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: LARRY STRONG [mailto:strol@compassminerals.com]
Sent: Monday, December 10, 2007 2:21 PM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

I believe that GSL has shown that it cares about the environment in the way they utilize the pond system that they already have. I would like them to be able to expand their complex so that they can grow and be able to better meet the demands of the fertilizer industry, grow jobs for our area, and help the tax base of the state. GSL uses the sun to extract the minerals from the Great Salt Lake which is a self replenishing resource of the State of Utah for the minerals that they extract. Fertilizer is one of those commodities that is needed through out the world for our food supply. I work for GSL as a maintenance supervisor over the heavy equipment used to extract the minerals from the pond complex. Not being able to expand the complex could directly affect my future and the future of my family. P-64.01

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Wed, 12 Dec 2007 10:47:45 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: Acg863S11Y5nFt+ATRmRWWWoWrujdQABAOQw
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 12 Dec 2007 18:47:46.0317 (UTC) FILETIME=[7C7853D0:01C83CEF]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Wed, 12 Dec 2007 11:47:53 -0700 (MST)
X-Spam-Status: No, score=-2.018, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_40_50,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Kurt Schull [mailto:krschull@yahoo.com]
Sent: Wednesday, December 12, 2007 11:19 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

I'm writing to express my support for the GSL expansion project. It would have a very positive affect on the neighboring communities in the form of increased property taxes, sales taxes, and employment opportunities. The state would also see increased royalties, which would benefit the state populous, in general. In addition, the increased minerals recovery will help meet the needs of increased farm production to feed more people in this country and throughout the world. P-65.01

As for environmental harm, I've seen the areas of the intended expansion; the mud flats and shoreline support little or no vegetation and are frequently under water, while the privately-owned land, to the south of the western impoundment, have been grazed so hard by cattle, that the only other living creatures I've seen are insects, some common birds, and jackrabbits. P-65.02

In my opinion, the known benefits far outweigh any arguments of possible negatives.

Thanks for reading this.

Kurt Schull

P-66

Subject: FW: IFA letter to the attention of the Army Corps of Engineers : 13/12/2007
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Corey Milne" <milnc@compassminerals.com>

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Michel PRUD'HOMME [mailto:mprudhomme@fertilizer.org]
Sent: Thursday, December 13, 2007 6:22 AM
To: Gipson, Jason A SPK
Cc: Ron Bryan
Subject: IFA letter to the attention of the Army Corps of Engineers : 13/12/2007

To the attention of Mr Jason Gipson, Chief of the Utah Regulatory Office, Army Corps of Engineers

Dear Sir,

The International Fertilizer Industry Association (IFA) is pleased to provide you with comments pertaining to the proposed expansion at the facilities of Great Salt Lake Minerals Corporation (GSL) in Utah. We are submitting the attached note at the request of GSL, which is a member of IFA.

Our organization is a not-for-profit international industry association representing more than 450 companies in 85 countries. Although IFA is an industry association, we prepare independent and authoritative market assessments on the supply and demand of fertilizers, intermediates and raw materials. Our comments pertain to the IFA's views as regards the global market situation of potash, and more specifically of potassium sulphate.

We trust this information will be valuable to you. Should you wish futher information, please contact us.

Sincerely yours,

Michel Prud'homme
Executive Secretary
Production and International Trade Committee

International Fertilizer Industry Association - IFA
28, rue Marbeuf, 75008 Paris, France

Tel: 33-1-53 93 05 13
Mobile: 33-6-27 39 39 17
Fax: 33-1-53 93 05 45
E-mail: mprudhomme@fertilizer.org

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IFA_Letter_to_US_Army_Corp_December_2007.pdf

International Fertilizer Industry Association

Mr. Jason Gipson
Chief, Utah Regulatory Office
Army Corps of Engineers
533 West 2600 South, #150
Bountiful, UT 84010

Paris, 13 December 2007

At the request of Great Salt Lake Minerals Corporation (GSL), the International Fertilizer Industry Association (IFA) submits the following comments on the state of the global potassium sulphate market, in relation with a proposal for a capacity expansion project at GSL, Utah.

IFA is a not-for-profit industry association representing the world fertilizer industry. Based in Paris, the Association serves more than 450 companies in 85 countries involved in manufacturing, trading and providing services of fertilizers, intermediates and raw materials. IFA promotes the sustainable production of fertilizer products and balanced fertilization, in consideration with environmental and societal concerns.

Great Salt Lake Minerals Corporation has been a member in good standing in IFA for more than five years.

Global market situation of potassium sulphate	P-66.01

GSL ranks as the world's third largest producer of potassium sulphate, accounting for 4 per cent of global capacity. It is the sole producer of potassium sulphate in North America by extracting potassium from naturally-occurring saline brines. GSL is a well-known and reputed supplier of potassium sulphate, with markets in the United States, Latin America and the pan-Pacific region.

Over the past ten years, the demand of potassium sulphate has continued to grow, servicing mostly the agricultural markets by virtue of the nutritive characteristics of this specialty fertilizer for special crops and chloride-sensitive soils. Potassium sulphate is the most popular low-chloride potassium fertilizer, providing two essential macro-nutrients in the form of potassium and sulphur that are beneficial to cash crops such as tea, coffee, grapes, citrus fruits, nuts and vegetables. In several countries, the use of naturally occurring potassium sulphate, such as the products from GSL, is permitted for organic farming. The main markets for potassium sulphate are Europe, Asia and the Americas. Since 1997, potassium sulphate demand has grown at an annual rate of 4 per cent.

Over the past five years, the global capacity of potassium sulphate has declined gradually, following rationalization in West Europe and North-east Asia. IFA estimated global capacity in 2006 at close to 5 million short tons of potassium sulphate. According to a recent world survey carried out by the IFA Secretariat, global capacity of potassium sulphate will rebound, expanding at an annual compound growth rate of 5.3 per cent between 2006 and 2011. However, virtually all this growth will take place in China, mostly for domestic use. Capacity will remain static in regions outside China, with the exception of two small projects in Jordan and Egypt.

International Fertilizer Industry Association - Secretariat: 28 rue Marbeuf - 75008 Paris - France
Tel. +33 1 53 93 05 00 - Fax +33 1 53 93 05 45/47 - ifa@fertilizer.org - www.fertilizer.org

Registered in England n°718812 at Confederation House, East of England Showground, Peterborough Cambridgeshire PE2 6XE

According to IFA, tight supply conditions have been prevailing since 2005, as demand growth exceeded supply growth. In 2007, most potash producers worldwide operated at close to effective capacity, while many customers have been on sales allocation since mid-year. During the period from 2007 to 2011, IFA has estimated that the world potash demand would increase at an annual rate of 3.1 per cent, compared with that of supply at 3.2 per cent, assuming that all announced expansions proceed as planned. Tight market conditions are projected to persist until 2011.

While new potassium supply will emerge in established producing countries, expansions of existing facilities are considered as a low-cost option for adding new supply, compared with brown-field or green-field projects. Most potash-related projects are focused on expanding potassium chloride capacity, while very few deal with primary potassium sulphate, due to the inherent characteristics of potassium deposits that are required for meeting economical and environmental considerations. In addition, most projects in other regions are centred on the manufacture of secondary potassium sulphate, which is based on the reaction of potassium chloride with sulphuric acid.

We trust this factual information will be useful in assessing the merit of the expansion project of GSL. Should you wish any further information, please do not hesitate to contact the Secretariat of the Association.

Sincerely yours,

Michel Prud'homme
Executive Secretary
Production and International Trade
Telephone: (33) 1 53 93 05 13
Email: mprudhomme@fertilizer.org

P-67

Subject: FW: Great Salt Lake Minerals Corp. Pond Expansion Comments
Date: Mon, 17 Dec 2007 06:50:26 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: Great Salt Lake Minerals Corp. Pond Expansion Comments
Thread-Index: Acg+lfdXU/kXgXxbQWq+Giki3mJkjACJi1Gg
Priority: Urgent
Importance: high
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Corey Milne" <milnc@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 17 Dec 2007 14:50:27.0550 (UTC) FILETIME=[2991A7E0:01C840BC]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Mon, 17 Dec 2007 07:50:31 -0700 (MST)
X-Spam-Status: No, score=-2.036, required=5
X-Spam-Checks:
AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE,X_PRIORITY_HIGH
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

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Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Kathy Mesias [mailto:Mesiask@compassminerals.com]
Sent: Friday, December 14, 2007 2:12 PM
To: Gipson, Jason A SPK
Subject: Great Salt Lake Minerals Corp. Pond Expansion Comments
Importance: High

The Food and Agriculture Organization of the United Nations estimates that the world population is expected to surpass 9.8 billion by the year 2050. This increased growth will require dramatic increases in food production, mostly through increased output from land already being cultivated.

Sulfate of Potash (SOP) produced by Great Salt Lake Minerals (GSL) Corporation has been shown to improve yields and quality in fruits, vegetables, tree nuts and pasture. The pond expansion is essential to help GSL grow the increasing fertilizer and SOP demands required to meet the critical worldwide food production demands. P-67.01

GSL is committed to operating in an environmentally friendly manner and utilizes the energies of the sun and wind to produce its SOP; unlike other SOP producers who depend on fossil fuels. GSL-SOP is recognized by many organic groups and is listed by the Organic Materials

P-67.01
(Continuing)

Review Institute (OMRI) for use in production of organic food and fiber.

In addition, the expansion will add at least 50 new jobs and increase tax and royalty payments by $5 million/year to the State of UT.

I strongly support GSL's expansion and believe the benefits of this project far outweigh any potential environmental risks.

Thank you,

Kathy Mesias
Great Salt Lake Minerals Corp.
A Compass Minerals Company
T: 913-344-9302 | F: 913-338-7906

P-68

Florida Fertilizer & Agrichemical Association

December 17, 2007

Mr. Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Dear Mr. Gipson:

On behalf of the Florida Fertilizer & Agrichemical Association, I am pleased to support GSL Minerals' application to increase its solar evaporation ponds on the Great Salt Lake.

This expansion is necessary to allow GSL Minerals to produce more organic potassium sulfate fertilizer, a key ingredient in the production of fruits and vegetables. Current worldwide demand for potassium fertilizers exceeds the industry's production capacity by an estimated 1.3 million tons. Given the rapid expansion of the world's population and subsequent demands for abundant and affordable food, GSL's application should be granted as additional fertilizer supplies are necessary to meet the increasing worldwide need for sustainable food production.

The fact is we need fertilizers to feed the world. Dr. Norman Borlaug, a Nobel Laureate and the agronomist behind the Green Revolution, noted that "Without conventional fertilizer, we have 2 billion more people than the world can sustain. The problem is, I don't see 2 billion volunteers willing to disappear." Rather than seeking volunteers, let's expand supplies. P-68.01

In addition to its global impact, GSL Minerals' expansion will have a local impact as well, providing 50 jobs and adding approximately $5 million a year to the state's coffers.

FFAA's members, which include most of the leading fertilizer manufacturers, dealers and distributors with markets in Florida, are committed to doing our part to feed the world. Help us do that by acting favorably on GSL Minerals' application.

Thank you for the opportunity to comment.

Sincerely,

Mary C. Hartney
President

cc: FFAA Board of Directors

FFAA, P.O. Box 9326, Winter Haven, FL 33883
Phone: 863.293.4827 Fax: 863.294.8626

P-69

Subject: FW: GSL Expansion Permit Public Comment Submission
Date: Mon, 17 Dec 2007 10:11:31 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion Permit Public Comment Submission
Thread-Index: AchA1kJQLezUxcDsQdqDgvw1UNdOQgAAfcNA
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Ron Bryan" <Bryanr@compassminerals.com>
X-OriginalArrivalTime: 17 Dec 2007 18:11:36.0786 (UTC) FILETIME=[4364EB20:01C840D8]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Mon, 17 Dec 2007 11:11:42 -0700 (MST)
X-Spam-Status: No, score=-2.253, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Ilesh Shah [mailto:shahi@compassminerals.com]
Sent: Monday, December 17, 2007 10:57 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion Permit Public Comment Submission

I am a recent employee of GSL Minerals and would whole heartedly support the GSL expansion of solar evaporation ponds. I have seen positive commitment from management and employees, and convinced that there are numerous benefits to the society in general and to the local community. P-69.01

Ilesh Shah, Ph.D.

Process Engineer

P-70

Subject: FW: (Public Notice SPK-2007-00121) Great Salt Lake Project
Date: Mon, 17 Dec 2007 11:43:03 -0800
X-MS-Has-Attach: yes
X-MS-TNEF-Correlator:
Thread-Topic: (Public Notice SPK-2007-00121) Great Salt Lake Project
Thread-Index: AchA4t2E93q6EuEfSvmjNWHvpXKLmwAAie+A
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "Ron Bryan" <Bryanr@compassminerals.com>,
"S. Blaise Chanson" <bchanson@bio-west.com>
X-OriginalArrivalTime: 17 Dec 2007 19:43:04.0778 (UTC) FILETIME=[0A7E0AA0:01C840E5]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Mon, 17 Dec 2007 12:43:07 -0700 (MST)
X-Spam-Status: No, score=-2.257, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

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Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Jack Novacek [mailto:Novacek@compassminerals.com]
Sent: Monday, December 17, 2007 12:28 PM
To: Gipson, Jason A SPK
Cc: Ron Bryan
Subject: (Public Notice SPK-2007-00121) Great Salt Lake Project

Jason,
Please take the time to read the letter I have sent in regards to the Compass Minerals (Great Salt Lake Minerals) expansion project.

I still can't help but think of all the tax dollars and royalties that the State of Utah has been receiving over the years as well.

Please contact me with any questions. Thanks

Jack Novacek
Director - GSL Sales
Great Salt Lake Minerals Corp.
A Division of Compass Minerals
9900 West 109th Street
Suite 600
Overland Park, KS 66210
Phone: 913-344-9320
Fax: 913-338-7906

Cell: 816-536-0971

U.S. Army Corps GSL Novacek Letter.doc

Jason Gipson
Project Manager
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

(Public Notice SPK-2007-00121)

Dear Mr. Gipson,

I will have been an employee of Compass Minerals for 22 years on January 13, 2008. I have seen a great deal of changes in these 22 years. I worked for American Salt Company, North American Salt Company, IMC Salt Company, and now Great Salt Lake Minerals. My employment during this time has always been associated with the Great Salt Lake and I have been proud to work with and let my customers know how the people in Salt Lake City and Ogden, Utah are willing and open to new and opportunistic ideas. I was surprised to see and hear of the resistance some of the people in that area have raised to our proposed expansion, especially since we have continually demonstrated our care and concern regarding our property. We have been excellent stewards of the land and property we have been in charge of. When we owned the Grantsville, Utah plant and the Ogden, Utah plant we invested a great deal of our time, effort, and funds to take good care of the land and the lake. In 1986, we did everything we could to protect the land from the devastating floods that occurred during that summer. I am sure the U.S. Army Corp of Engineers can remember our investment of efforts during that time. We have always maintained the Great Salt Lake's beauty and natural setting to provide a truly sacred area for many years to come.

From my customers' aspect, we need to develop and make more product available to feed the world. The fertilizer that we produce allows farmers to feed millions of people. We sell the fertilizer made at Great Salt Lake Minerals' Ogden, Utah facility to specialty crop farmers that grow fruits, vegetables, nut trees, and for animals. We also sell product to the wall board industry which provides the interiors for homes and buildings in the United States. We have ensured that the potash we produce is environmentally friendly, is in demand, and popular for other markets such as golf course fertilizers. In order to keep up with demand the U.S. domestic markets, we have seen the need for our potential customers to import the product from other sources. Some of the global manufacturers are found in Belgium, Germany, Chile, and China. These manufacturers offer a product that is not natural, nor organic such as manufactured by Great Salt Lake Minerals. Our proposed expansion will enable us to provide the additional product needed domestically to meet current demand as well as provide a superior safe and natural product. P-70.01

Mr. Gibson, I have waited until the last day allowed to send this hoping you will take the time to read what I have to say. Please provide the content of this letter your consideration before decisions are made. If you have any questions, please feel free to contact me.

Sincerely,

Jack Novacek
Director, GSL Sales
(913) 344-9320

P-71

Subject: FW: GSL Expansion permit public comment submission
Date: Mon, 17 Dec 2007 11:08:18 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL Expansion permit public comment submission
Thread-Index: AchA3u7I5t+nfMmuQq+/qoO13awerwAATu/Q
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Ron Bryan" <Bryanr@compassminerals.com>
X-OriginalArrivalTime: 17 Dec 2007 19:08:19.0227 (UTC) FILETIME=[2F6836B0:01C840E0]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Mon, 17 Dec 2007 12:08:20 -0700 (MST)
X-Spam-Status: No, score=-2.255, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

Jason Gipson
Chief, Utah Regulatory Office
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Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: jeremy strong [mailto:mophiespapa@msn.com]
Sent: Monday, December 17, 2007 11:59 AM
To: Gipson, Jason A SPK
Subject: GSL Expansion permit public comment submission

I have seen GSL use their ponds most off my life, my father, my uncle and two of my brothers are currently or have previously been employed by gsl. I also live not very far from the plant and through work have benifited from the use of those ponds. i feel that GSL has done a great job in the usage of the pond system that they have now, but the expansion would do a great deal not only for GSL but for all those around the area, including more jobs, more product and that it would help the economy and the tax base for the state. My family and friends are directly affected by what happens at GSL and if the expansion does not go through it could affect the future that we all have. thank you for your time. P-71.01

Jeremy

P-72

Subject: FW: GSL expansion
Date: Tue, 18 Dec 2007 06:27:49 -0800
X-MS-Has-Attach:
X-MS-TNEF-Correlator:
Thread-Topic: GSL expansion
Thread-Index: AchBA7ZtN68AfYy6Tmi7/9potK7mbQAfnECg
From: "Gipson, Jason A SPK" <Jason.A.Gipson@usace.army.mil>
To: "S. Blaise Chanson" <bchanson@bio-west.com>,
"Ron Bryan" <Bryanr@compassminerals.com>
X-OriginalArrivalTime: 18 Dec 2007 14:27:50.0285 (UTC) FILETIME=[2AFD33D0:01C84182]
X-Greylist: IP, sender and recipient auto-whitelisted, not delayed by milter-greylist-3.0rc7 (mail.bio-west.com [70.98.253.170]); Tue, 18 Dec 2007 07:27:51 -0700 (MST)
X-Spam-Status: No, score=-2.26, required=5
X-Spam-Checks: AWL,BAYES_00,DNS_FROM_RFC_ABUSE,HTML_MESSAGE
X-Scanned-By: MIMEDefang 2.57 on 70.98.253.170

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Jason Gipson
Chief, Utah Regulatory Office
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Phone: 801-295-8380 X 14
Fax: 801-295-8842

From: Lynette Jensen [mailto:jensenl@compassminerals.com]
Sent: Monday, December 17, 2007 4:23 PM
To: Gipson, Jason A SPK
Subject: GSL expansion

To Whom it may Concern:
I am aware of the recent request GSL/Compass Minerals has made to increase the pond sizes and produce more SOP fertilizer in Utah. I am very aware of the SOP and other fertilizer shortages that we are facing here in the US as well as abroad. As fertilizer is an integral part of feeding the nation; producing more with less land and resources, it seems wise and forward thinking for this action to be supported. P-72.01

Thank you for your consideration.

Lynette W. Jensen
ph: 801-732-3255
fax: 801-732-3373

APPENDIX E

AGENCY COMMENTS DURING SECOND SCOPING PERIOD

United States Department of the Interior

FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To
FWS/R6
ES/UT
ER 09-603
65411-2007-FA-0186

July 8, 2009

Jason Gipson, Project Manager
US Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

RE: Public Notice SPK-2007-00121, May 26, 2009; Proposed 91,000-acre Expansion of Solar Evaporation Ponds on the Great Salt Lake

The U.S. Fish and Wildlife Service (Service) provides the following comments on Public Notice SPK-2007-00121. The referenced public notice revises a previous notice from 2007, expanding the original scope of the project from 33,000 acres of new solar evaporation ponds on and near the Great Salt Lake (GSL) by Great Salt Lake Minerals Corporation (Corporation) to a proposed 91,000 acres of solar evaporation ponds which includes approximately 80,000 acres of waters of the United States.

Previous Comments and Involvement

We have participated in the development and review of this proposed project since December 2006 when a pre-application meeting and field trip was held with personnel from the US Army Corps of Engineers (Corps), Utah Division of Wildlife Resources (UDWR), the Corporation and their consultant, BIO-WEST, Inc. During meetings, field trips and in comments letters, we have raised resource issues and concerns that we believe need to be addressed in the environmental reviews for the proposed project pursuant to our authorities under the Endangered Species Act of 1973, as amended, the Migratory Bird Treaty Act, the Clean Water Act, and the Bald and Golden Eagle Protection Act. Our resource concerns have been raised in previous letters including: the May 1, 2007 letter to the Resource Development Coordinating Committee (RDCC) regarding new leases in Clyman Bay; our December 12, 2007 scoping comments submitted to the Corps under the initial public notice; our April 15, 2008 comments submitted to the Corps regarding reconstruction of the Corporation's water delivery canal system; the January 7, 2009 letter sent to RDCC regarding lease swaps; and the July 7, 2009 appeal submitted to the State Engineer regarding an application for an additional 353,000 acre-feet of water from the GSL.

On January 16, 2008 the Service became a cooperating agency with the Corps in development of the Environmental Impact Statement (EIS). Along with other cooperating and coordinating agencies, we reviewed and provided input on the purpose and need statement, scoping comments, and data needed to address potential resource and environmental impacts to be evaluated in the (EIS). The agencies and the Corporation were also attempting to develop a list of alternatives to include in the EIS. Since our last meeting, data collection has continued. In addition, the Corporation has now amended their proposed project, significantly increasing the project footprint. While our resource concerns are similar to those previously provided, it is likely that the amended project will substantially increase resource and environmental impacts.

Because the Corps is preparing an EIS rather than a 404 permit, the Service reserves its responsibilities under the 1992 404(q) Corps/Department of Interior Memorandum of Agreement until the environmental studies have been completed and the Draft EIS is published.

Project Description

The Corporation currently operates approximately 47,000 acres of evaporative ponds located on the east and west shores of the Great Salt Lake. A 25,000-acre evaporation facility is located on the west shore of the North Arm (Gunnison Bay) of the GSL and a 22,000-acre evaporation facility is located on the east shore of the Bear River Bay. The existing solar evaporation ponds are located within the GSL and are located below 4205 feet above mean sea level, which is below the high water mark of the GSL. These facilities allow the Corporation to extract about one-half of the potassium needed in their production of potassium sulfate. The company draws naturally occurring brine from the lake into shallow ponds and allows solar evaporation to produce sulfate of potash, as well as salt and magnesium chloride minerals. Sulfate of potash is a specialty fertilizer that improves the yield and quality of high-value crops such as fruits, vegetables, tea, tree nuts and turf grasses. The facility has operated on the lake for about 40 years. At present, the remaining half of the potassium is imported from other sources. The proposed expansion of the solar ponds will reduce or discontinue the Corporation's reliance on imported potassium.

The applicant is proposing to construct up to six additional solar evaporation ponds totaling approximately 91,000 acres. The proposed project includes an 8,000-acre pond on the east side of the Great Salt Lake in the Bear River Bay. Brine would be pumped to and from the new pond with existing pump stations; however, the capacity of these pump stations would be increased proportional to the new pond acreage. Additional feed brine for this new pond would come from the North Arm of the GSL, flowing through existing east side ponds. On the west side of the lake, up to five new solar evaporation ponds would be added to the existing west side complex, including a 23,000-acre pond south of Dolphin Island, a 38,000-acre pond north of Dolphin Island, a 6,000-acre pond at the southern end of Clyman Bay between the Union Pacific Railway and several existing ponds, a 14,000-acre pond south of the railroad causeway and a 2,000-acre pond north of the railroad causeway. Feed canals into the lake and pump stations would be enlarged or newly constructed to pump brine to and from the new ponds. Dikes would be built to

accommodate the pond expansion and impound the waters of the respective areas. On the east side of the lake approximately 540,000 cubic yards of fill would be discharged into Bear River Bay to create the dikes. On the west side of the lake, dike construction would require approximately 4.7 million cubic yards of fill to be discharged into open water in the vicinity of Clyman Bay to create dikes. To increase efficiency, the proposal also includes the widening and deepening of the Behrens Trench which transports brines from the west-side ponds to the ponds in Bear River Bay. The project also includes the purchase and transport of potassium sulfate from the U.S. Magnesium facility located on the southwest side of the lake. In addition to the project description contained in the public notice, the company has applied for 353,000 acre-feet of GSL water to feed the process. Other water rights may be needed from the Bear River or West Desert to flush unwanted salts out of the ponds.

Purpose and Need Statement

The project purpose and need criteria contained in the June 2009 Information Packet for the public information meetings, limits alternatives in the EIS to only extraction from the GSL and eliminates alternatives such as importing potassium from existing or new sources. We recommend the EIS include a broader purpose and need statement which would allow a larger suite of alternatives to be considered. We also recommend the criterion to "maximize organic potassium sulfate (SOP) production capacity" be revised as this criterion suggests that only the largest alternative would be acceptable. We are concerned that this criterion might negate the statement in the information packet that "various combinations of solar evaporation ponds described under the proposed action would be evaluated, as would their configurations" (p. 19). A1.1

Water Quality

Please review our December 12, 2007 letter from the initial scoping notice for a list of water quality concerns, including selenium and mercury, salt balance, changes in the lake's chemical composition, salinity in Bear River Bay, and how these might affect the lake and its biotic community (e.g., algae, brine shrimp, brine flies, and birds). The analysis, particularly in Bear River Bay, should evaluate a range of lake level and precipitation scenarios and evaluate the effects of multiple successive years of drought. A1.2

Migratory Birds

The GSL ecosystem is an irreplaceable and immitigable resource due to its location, size, and ecological features. It is the fourth largest terminal lake in the world (Arnow and Stephens 1990). Located approximately midway through an avian migration route between northern Canada and South America and located between the arid desert to the west and rugged mountains to the east, the GSL and its associated wetlands become a vital bird staging area in an otherwise arid region. The importance of the GSL ecosystem to wildlife on a national and international level is well documented.

The GSL is part of the Western Hemispheric Shorebird Reserve Network (WHSRN), a distinction afforded to only five areas in the lower 48 states (Manomet 2007). To meet requirements of the WHSRN, an area must support more than 20,000 shorebirds, or 5% of a flyway population. The GSL ecosystem easily exceeds the WHSRN standards, with impressive numbers of Wilson's phalarope (500,000; largest staging concentration in the world), red-necked phalarope (240,000), American avocet (250,000; exceeds any other wetland in the Pacific flyway), black-necked stilt (65,000; exceeds any other wetland in the Pacific flyway), and marbled godwit (30,000; the only staging area in the interior USA) (UDWR 2008).

Bear River Bay – The proposed project includes the discharge of approximately 540,000 cubic yards of fill into Bear River Bay and the conversion of 8,000 additional acres in Bear River Bay from saline open water, sporadically inundated playa lakebed, seasonally flooded playa, saline wetlands, and potential freshwater springs into super-saline evaporation ponds. Bear River Bay is extremely important for migratory birds:

- Bear River Bay is just one of several bays on the GSL that hosts hundreds of thousands of breeding, feeding, migrating and staging migratory birds every year. Bear River Bay is considered crucial to bird conservation at the Western Hemisphere level as recognized by the Western Hemisphere Shorebird Reserve Network. The area is also recognized as an Important Bird Area in North America by the National Audubon Society. These special designations are assigned only after extensive and rigorous documentation and review by conservation professionals. In addition, the role of the GSL, and lands within Bear River Bay in particular, figured prominently in devising conservation plans and associated actions for several species and species groups such as the Intermountain West Waterbird Conservation Plan (Ivey and Herziger, 2006) and the Marbled Godwit Conservation Plan (Melcher et al. 2006).

- The saline waters and freshwater marshes of the GSL comprise one of the most critical breeding and staging sites for colonial waterbirds, waterfowl and shorebirds in the Intermountain West (IMW). Oring et al. (2000) stated "the Great Salt Lake stands out as probably the most important inland shorebird site in North America." Shuford et al. (2002) found that in the fall, 78% of the IMW region's black necked-stilt and American avocet, 77% of willet, 62% of whimbrel, 87% of long-billed curlew, 86% of the marbled godwits, and 39% of the dowitchers were concentrated at the GSL. Shuford's study also found that the GSL was the most important location for northbound migrant shorebirds in the spring. Across years and seasons, the shorebird species listed above were consistently concentrated in the largest numbers in Bear River Bay (UDWR 2008).

- Bear River Migratory Bird Refuge is also located in Bear River Bay. The 74,000 acres of the Refuge are lands specifically set aside for wildlife conservation. The Refuge hosts 1% of the continental breeding population of American avocet, 2% of the continental breeding population of black-necked stilt, the largest breeding colony of white-faced ibis in the world (about 18,000), 30% of the western population of tundra swans, 25% of the

continental population of marbled godwit during migration, 3% of the continental population of long-billed dowitcher during migration and 2% of the continental breeding population of Franklin's gull. Each of these species is considered a priority for conservation at the continental, regional, and refuge level due to declining populations or having breeding and migration habitat restricted to the IMW. These species may also spend considerable time utilizing habitats outside the Refuge boundary in Bear River Bay, especially Willard Spur.

- The GSL acts as the largest inland staging area for marbled godwit in North America (Melcher et al. 2006). Paul and Manning (2002) found that greater than 90% of the marbled godwit using the GSL were concentrated in Bear River Bay. The peak count of godwits from Bear River Bay of 43,000 in 2000 is the equivalent of 25% of the global population.

Gunnison Bay (North Arm) – The proposed project includes the discharge of approximately 4.7 million cubic yards of fill into Gunnison Bay and the conversion of up to 83,000 additional acres of Gunnison Bay from saline open water, sporadically inundated playa lakebed, seasonally flooded playa, saline wetlands, and potential freshwater springs into super-saline evaporation ponds. Site specific data for avian usage of Gunnison Bay is quite limited when compared to data for Bear River Bay and other areas around the lake; however, the limited information that does exist indicates that the North Arm and the western shore of Gunnison Bay provide foraging and nesting habitat for shorebirds including the snowy plover and the American avocet. Currently, the Bay is not used extensively by birds, but shorebird, waterfowl and waterbird usage of the North Arm increases substantially when lake levels are high. However, Gunnison Bay is very important for American white pelicans:

- The GSL hosts the largest breeding population of American white pelicans in the United States west of the Continental Divide (King and Anderson 2005). Gunnison Island is one of the premier breeding locations in the world and was set aside by the Utah State Legislature in 1977 through the Pelican Management Act to protect the GSL pelican population and to protect and manage Gunnison Island specifically for pelicans.

- Recent colony failures at Chase Lake National Wildlife Refuge due to disturbance from predators and the fact that young pelicans are susceptible to West Nile Virus (Sovada 2009) make the colony at GSL vitally important for this species. It also appears that disease-related die-offs have increased in recent years while at the same time the population of pelicans in the western U.S. has declined (Rocke et al. 2005). Due to its isolated location in Gunnison Bay, predator access to Gunnison Island is rare, and mosquitoes with West Nile Virus are less likely to arrive at the island.

- At a lake surface elevation of 4193.7 feet, Gunnison Island is almost connected to the mainland by a land bridge (USACOE 2009). A further reduction in lake elevation would allow predators, such as the coyote, almost unhindered access to the colony, perhaps

causing catastrophic abandonment of eggs and young, potentially affecting the worldwide population and conservation status of the species.

Gilbert Bay (South Arm) – The project does not appear to result in the fill or creation of solar evaporation ponds in Gilbert Bay; however, water withdrawals from the lake could affect wildlife in this portion of the lake:

- Many avian species rely heavily on the brine shrimp and brine flies produced in the saline, open waters of the GSL including Wilson's phalarope and eared grebe (Jehl 1988), numerous species of waterfowl (Vest et al. 2008) and migrating shorebirds (UDWR 2008). Decreasing lake levels as a result of the proposed diversion, could lead to a decrease in brine shrimp and brine fly densities due to increasing salinity levels, negatively affecting food availability for migrating birds dependent on this resource. A1.3

- Loss of available forage can negatively impact migratory bird populations through a decrease in body condition and poor reproductive success. Many of the waterfowl and shorebirds that stop at the GSL are re-fueling for migration and increasing body fat which they carry to their breeding grounds. The amount of body fat directly affects reproductive success. A1.4

- Eared grebe, snowy plover, long-billed curlew, and marbled godwit are all listed on the Service's 2008 list of Birds of Conservation Concern (BCC). The BCC identifies 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 (USFWS 2008). The BCC is intended to stimulate collaborative and proactive conservation actions among Federal, State, Tribal, and private partners. We hope that, by focusing attention on these highest-priority species, the BCC will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities. A reduction in food availability affecting avian migration and/or reproductive success would run counter to our efforts under the BCC. A1.5

- A further reduction in lake levels would reduce the remaining wildlife habitat and could influence food availability, disease outbreaks, and predation. Concentrating populations into fewer areas raises the risk of population crashes or possible extinction due to catastrophic events such as disease outbreaks, unusual weather and predation. A1.6

<u>Specific Avian Species and Issues to Include in the EIS</u>

The EIS should evaluate the proposed expansion's cumulative impact on marbled godwit populations, including the impacts of further reduction of the remaining habitat in Utah and the influence of food availability, disease outbreaks, and predation. There is evidence that marbled godwit habitat has been reduced over the last 60 years. Woodbury et al. (1949) indicated A1.7

marbled godwit were "especially numerous around Great Salt and Utah lakes." In recent times, however, fewer than 20 godwits can be found on Utah Lake which is likely due to loss of habitat caused by changes to the natural hydrology (Bridget Olson, personal communication). Concentrating populations of marbled godwit and other species into fewer areas raises the risk of extinction due to catastrophic events such as disease outbreaks, unusual weather and predation. In addition to the habitats lost and/or modified from the existing facilities associated with the project, cumulative habitat losses also include Willard Reservoir and upstream diversions of water from the Bear River resulting in desiccation of wetlands in Bear River Bay. A1.7

Changing water regimes in Bear River Bay should also be considered in the EIS. Marbled godwits equipped with satellite and radio transmitters in 2005-2007 spent up to 70% of their time at GSL just south of the Bear River Refuge border in the shallow waters of Willard Spur (Bridget Olson, personal communication). Currently, waters from this area meander to the southwest and then parallel the current western-most dike of the Corporation. The proposed 8,000-acre expansion would interrupt this watercourse thereby disrupting the hydrologic regime. The installation of a new series of dikes, as proposed, would cut-off this out-flow area which might increase water depths in the north-east portion of Willard Spur as well as the un-impounded portions of Bear River Refuge. The increased water depths may render the area too deep for feeding shorebirds and waterfowl, including marbled godwits. A1.8

The impact of changing water quality on migratory birds and their habitat should also be considered in the EIS. The release of waters from the ponds ~~where minerals have~~ concentrated would modify the water quality, and concentrated minerals would impact water and soil chemistry. Soil and water chemistry influence the diversity, abundance and structure of aquatic invertebrate and vegetative communities. Changes to invertebrate and vegetation communities could lead to a decrease in food availability for migratory birds. Loss of habitat associated with the loss of available foods can lead to cumulative impacts to migratory bird populations through a decrease in body condition and poor reproductive success. Many of the waterfowl and shorebirds that stop at Bear River Bay are re-fueling for migration and increasing body fat which they carry to their breeding grounds. The amount of body fat directly affects reproductive success. A1.9

The impact of predation on migratory bird populations is another issue that should be addressed in the EIS relative to the proposed expansion. Declines in many waterfowl populations and shorebirds may be largely explained by habitat loss with predation being an exacerbating factor (Ball et al. 1995, Cote and Sutherland 1997 *in* Frey 2004, Cavitt 2006). Waterfowl nesting success surveys conducted from 1999-2006 on Bear River Refuge indicated predation rates exceeded success rates needed for regional population sustainability. In order to raise waterfowl and shorebird nesting success rates, the Refuge implemented predator control in 2001. Since that time, nesting success rates have gradually increased to levels needed for population expansion. The configuration of the Refuge with a series of dikes to impound water provides an extensive system of corridors for potential travel and foraging for red foxes, raccoons, and striped skunks. Therefore, predator control is an essential tool and is needed on an annual basis as predators from A1.10

nearby cities continue to move into Refuge habitats in search of food and space. These predators tend to stay within a specified distance of a dike or levee (about ¼ mile) and rarely move out into open waters found on the southern boundary of the Refuge and Willard Spur. Migratory birds roosting, foraging and nesting in open waters in these areas are at lower risk of predation. With the proposed expansion of the Corporation's facilities and the series of levees, the number of predators and predator travel and foraging corridors will be increased. The proposed levee system will also provide mammalian predators access to known migratory bird foraging, roosting and nesting sites along the southern edge of the Refuge that are now nearly free of predators. A1.10

Bear River Bay is highly important to waterfowl. The area is used by Canada geese for molting with more than 10,000 counted during some years in the late 1990's (Tom Aldrich, personal communication). The Bay provides aquatic habitat for a fishery similar to that of the Bear River and thus provides forage for several species of picivorous birds. The area is also important foraging and resting habitat for other waterfowl due to the fresh water, aquatic macrophytes, and other aquatic biota that exist in the Bay (Don Paul, personal communication). For example, up to 126,000 green-winged teal were counted in Bear River Bay during 2007. The EIS should evaluate the biotic and abiotic features that attract birds to the Bay, evaluate the direct and indirect impacts to the avian populations of losing 8,000 acres of habitat in the Bay, and evaluate if the losses can be avoided or mitigated elsewhere. The analysis should consider the changes in habitats, both temporally and spatially. The analysis should evaluate the proposed project's effects to all migratory bird species, including those listed above. The analysis should provide a plan for long term monitoring of avian resources relative to potential project impacts as well as a mitigation plan for potential project impacts to migratory birds. For example, it should evaluate noise and visual effects from project activities, habitat reduction and fragmentation, and whether habitat enhancement efforts may minimize displacement impacts for some species. Habitat impacts for species on the Service's 2002 list of Birds of Conservation Concern (BCC) and Partners in Flight Priority Species should be evaluated as part of the analysis. The BCC List identifies those migratory and non-migratory avian species that, without additional conservation actions, are likely to become candidates for listing under the ESA. To help meet responsibilities under Executive Order 13186, lease stipulation should include provisions which: recommend ground-disturbing activities occur outside critical breeding seasons for migratory birds; minimize temporary and long-term habitat losses; and require mitigation for unavoidable habitat losses, particularly at the field development stage. Mitigation should include the option for offsite, in-kind habitat compensation.

A1.11
A1.12
A1.13
A1.14
A1.15
A1.16

Gunnison Island is one of the premier breeding colonies for American white pelican in North America, and due to its location predator access to Gunnison Island is rare. The EIS should evaluate impacts to the breeding colony of pelicans on Gunnison Island and to other shorebirds along the shoreline and at springs and wetlands within Clyman and Gunnison bays. Other birds such as peregrine falcon also nest on the Bay's islands (Dolphin, Cub, and Gunnison). With the amended proposed project covering up to 83,000-acres, impacts to species nesting on these other islands should also be included. A1.17

If lake levels rise like they did in the mid-1980's, the South Arm of the GSL may become too fresh to support large populations of brine shrimp; subsequently, salinities in the North Arm may decrease to levels that would support large numbers of brine shrimp which would then attract large numbers of birds as happened in the 1980's (Don Paul, personal communication). The analysis of the expansion of evaporation ponds in Clyman and Gunnison bays should evaluate how migratory birds would be affected under this high-water scenario.	A1.18

Habitat Fragmentation and Disturbance

The analysis should identify the amount, location, and timeframe of temporary disturbance as well as permanent facilities that could result from the proposed action. Displacement of wildlife across a large area during critical times, such as breeding, could prove a significant impact. If wildlife are displaced, it is likely that the area to which they move is inhabited by other wildlife or disturbed by other ongoing activities. Depending on the season and species, displacement could lead to nest abandonment, inter- and intra-specific competition, reproductive failure, and possible mortality, including an increase in disease susceptibility. Nesting American white pelicans are known to be highly susceptible to human related disturbance. In addition, the cumulative effects of other projects in the area may limit the availability of alternative sites for displaced wildlife. On-going maintenance of dikes and other facilities may increase the disturbance and/or destruction of nests of species such as killdeer.	A1.19

Aquatic Habitat

Because the Great Salt Lake and the Bear River Bay inflow area contain significant wetlands and littoral and riparian areas, we recommend alternatives be developed to avoid any wetland losses in accordance with Section 404 of the Clean Water Act, Executive Order 11990 (wetland protection) and Executive Order 11988 (floodplain management) as well as the goal of "no net loss of wetlands." Riparian and littoral areas are some of the most productive wildlife habitat types in North America. Riparian and littoral vegetation plays an important role in protecting streams and lakes, reducing erosion and sedimentation as well as improving water quality, maintaining the water table, controlling flooding, and providing shade and cover. In view of their importance and relative scarcity, impacts to riparian and littoral areas should be avoided. Unavoidable impacts should be fully mitigated.	A1.20

Cumulative Impacts

The combined, incremental effects of human activity, referred to as cumulative impacts, have the potential to pose a serious threat to the GSL environment. While they may be insignificant individually, cumulative impacts accumulate over time and space, from one or more sources, and can result in the degradation of important resources. Because of this, cumulative impacts analysis should be addressed in the EIS. The cumulative impacts discussion should, at a minimum, include evaluations within the region of influence of the proposal for: potential for additional fish and wildlife impacts due to energy development including oil and gas in the GSL;	A1.21

impacts from increased habitat fragmentation; displacement of wildlife; and cumulative effects of lake level changes on project affected resources. In addition, the EIS could include an analysis of the alternatives' carbon footprint and impact on global climate change. A1.21 A1.22

Finally, it is important to recognize that saline lakes worldwide have been negatively affected by water diversions, mining, pollution, introduction of exotic species and other anthropogenic disturbances (Williams 2002). These activities and stressors have changed the character of saline lakes, altered limnology, reduced biodiversity and irreversibly degraded the values (e.g., ecological, economic, recreational, aesthetic, cultural and scientific) of saline lakes (*ibid*). For example, water diversions from the Aral Sea have dramatically altered the lake's ecology, affected water chemistry, reduced fish populations, eliminated the commercial fishing industry, altered the region's climate, and reduced crop yields and created severe air quality due to wind dispersal of salt-laden sediments from exposed mudflats (NASA 2001, Aladin et al. 2008). Another example is the Dead Sea where water diversions for domestic and agricultural use and the industrial pumping of lake brines along the shoreline have dried the southern basin of the Dead Sea, exposing mudflats and affecting infrastructure (Gavrieli 2008). A1.23

Without careful and considered management of the GSL, we are concerned that similar or related effects recorded at other saline lakes may occur here, including significant environmental degradation and reduction in avian habitat, species abundance and diversity. Impacts to recreation, agriculture, human health and tourism might also ensue. As part of the cumulative effects analysis, the EIS should provide a thorough evaluation the above issues as well as water-level changes, lake-wide impacts, and biological effects from this proposed project.

We appreciate the opportunity to provide these comments. As this project progresses, the Service would appreciate information on upcoming field visits and interagency coordination. If you need further assistance, please contact Nathan Darnall, Ecologist and Migratory Bird Coordinator, at the letterhead address or (801) 975-3330 ext. 137.

Sincerely,

Larry Crist
Utah Field Supervisor

cc: UDFFSL – (Attn: Dave Grierson)
UDWR – Northern Region (Attn: Pam Kramer)
EPA – Denver (Attn: Dick Clark)
FWS – Bear River MBR (Attn: Bob Barrett)
FWS – Migratory Birds (Attn: Jim Dubovsky, Chief)

LITERATURE CITED

Aladin, N.V., I.S. Plotnikov, P. Micklin and T. Ballatore. 2008. The Aral Sea: water level, salinity and long-term changes in biological communities of an endangered ecosystem - past, present and future. In: Oren, A, D. Naftz, P. Palacios and W.A. Wurtsbaugh (eds). Saline Lakes Around the World: Unique Systems with Unique Values. Natural Resources and Environmental Issues, volume XV. S.J. and Jessie E. Quinney Natural Resources Research Library, Logan, Utah.

Arnow, T. and D. Stephens. 1990. Hydrologic characteristics of the Great Salt Lake, Utah: 1847-1986. U.S. Geological Survey Water-Supply Paper 2332. Salt Lake City, UT 32 pp.

Cavitt, J. 2006. Breeding productivity of shorebirds at Bear River Migratory Bird Refuge, Utah 2005-2006. Unpublished report. Weber State University, Ogden, Utah.

Frey, S. Nicole. 2004. Habitat use and movements of predators on a managed waterfowl Refuge. Utah State University, Logan, UT PhD dissertation.

Gavrieli, I. 2009. The negative water balance of the Dead Sea; its impact and the future of the lake. In: Oren, A, D. Naftz, P. Palacios and W.A. Wurtsbaugh (eds). Saline Lakes Around the World: Unique Systems with Unique Values. Natural Resources and Environmental Issues, volume XV. S.J. and Jessie E. Quinney Natural Resources Research Library, Logan, Utah.

Ivey, G., and C. Herziger. 2006. Intermountain West Waterbird Conservation Plan, Version 1.2. A plan associated with the Waterbird Conservation for the Americas Initiative. Published by U.S. Fish and Wildlife Service Pacific Region, Portland, OR.

Jehl, J. R., Jr. 1988. Biology of the eared grebe and Wilson's phalarope in the nonbreeding season: a study of adaptations to saline lakes. Studies in Avian Biology 12:1-79

King, D. T., and Anderson, D. W. 2005. Recent population status of the American white pelican: a continental perspective. Waterbirds , 28 (Special Publication 1): 48-54.

Manomet Center for Conservation Science. 2007. (Great Salt Lake Western Hemisphere Shorebird Reserve Network Site [Web Page]. URL http://www.manomet.org/WHSRN/viewsite-new.php?id=36 [2007, September 14].

Melcher, C., A. Farmer, and G. Fernandez. 2006. Conservation Plan for the Marbled Godwit Version 1.1. Manomet Center for Conservation Sciences, Manomet, MA.

National Aeronautic and Space Administration. 2001. The Shrinking Aral Sea [Web Page]. URL http://earthobservatory.nasa.gov/IOTD/view.php?id=1396 [2009, July 7].

Oring, L.W., L. Neel, and K.E. Oring. 2000. Intermountain West Regional Shorebird Plan, U.S. Shorebird Conservation Plan, V. 1.0. Manomet Center for Conservation Sciences, Manomet, MA.

Paul, D.S. and A. E. Manning. (2002, *in press*). Great Salt Lake Waterbird Survey five-year report (1997-2001). Great Salt Lake Ecosystem Project, Utah Division of Wildlife Resources, Salt Lake City, Utah.

Rocke, T., K. Converse, C. Meteyer, and B. McLean. 2005. The impact of disease in American white pelican in North America. Waterbirds 28 (Special Publication 1):87-94.

Shuford, W.D., G.W. Page, and L.E. Stenzel. 2002. Patterns of distribution and abundance of migratory shorebirds in the Intermountain West of the United States. Western Birds 33:134-174.

Sovada, M. 2009. Disease, climate change and predators threaten breeding populations of American White Pelicans. Presentation at Weber State University.

U.S. Army Corps of Engineers. 2009. Lake elevation satellite imagery. Supplemental material for Public Notice SPK-2007-00121.

U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. [Online version available at http://www.fws.gov/migratorybirds]

Utah Division of Wildlife Resources. 2008. Great Salt Lake's importance to birds. [Web Page]. URL http://wildlife.utah.gov/gsl/waterbirdsurvey/RPT07Importance.htm#Anchor-Table-33869. [2009, January 20].

Vest, J. L., M. R. Conover, C. Perschon, J. Luft, and J. O. Hall. 2009. Trace Element Concentrations in Wintering Waterfowl from the Great Salt Lake, Utah. Archives of Environmental Contamination and Toxicology 56(2):302-316.

Williams, W. D. 2002. Environmental threats to salt lakes and the likely status of inland saline ecosystems in 2025. Environmental Conservation 29(2):154-167.

Woodbury, A.M., and C. Cottam, J. Sugden. 1949. Annotated check-list of the birds of Utah. University of Utah, Bulletin Vol. 39, No. 16. University of Utah, Salt Lake City.

Ltr # A2

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

JOHN HARJA
Director

RECEIVED
JUL 10 2009
JG

July 7, 2009

Jason Gipson, Project Manager
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Subject: Public Notice SPK-2007-00121
RDCC Project No. 09-10589 [09-10516]

Dear Mr. Gipson:

The State of Utah, through the Public Lands Policy Coordination Office, has reviewed this project. PLPCO makes use of the RDCC for state agency review of activities affecting state and public lands throughout Utah. The RDCC includes representatives from the state agencies that are generally involved or impacted by public lands management. Utah Code (63J-4-501 *et seq.*) instructs the RDCC to coordinate the review of technical and policy actions that may affect the physical resources of the state and facilitate the exchange of information on those actions among federal, state, and local government agencies.

Potassium sulfate, commonly known as SOP, is produced from the waters of Great Salt Lake by Great Salt Lake Minerals (GSLM), a subsidiary of Compass Minerals of Overland Park, Kansas. SOP is an "organic" specialty fertilizer used on high-value crops such as fruits, vegetables, tea, tree nuts, turf grasses, and other crops that do not tolerate potassium chloride fertilizer. GSLM is currently upgrading and expanding their facilities to increase their production capacity to help meet the growing worldwide demand for SOP. This expansion will also provide additional jobs and tax revenue to the state. Still, the state finds that a number of topics of analysis would benefit from further discussion before a final decision is made. The state offers the following comments in the spirit of cooperation through disclosure, analysis and adherence to the provisions of law, regulation, good governance and common sense. The state understands that impact analyses is a dynamic process that will continue into the future, reserves the right to supplement these comments as necessary, and recognizes solutions to issues can be found through ongoing efforts.

1. General Comments on Great Salt Lake Salinity, Habitat, and Ecology

The Great Salt Lake (GSL) is of hemispheric importance to migratory waterbirds (waterfowl, shorebirds and wading birds), and many species use the GSL as nesting, feeding and staging areas. At times, millions of birds may be found on the GSL and the surrounding

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wetland/upland habitat complexes. Since the GSL is a dynamic system, with lake elevation changing seasonally and annually, the abundance and location of habitats continually change over time. These seasonal changes create a diversity and continuity of available habitats, such that wildlife will travel around the GSL to find those habitats that supply their needs. It is because of this habitat diversity that the GSL has become critically important to wildlife, with the lake at times supporting over 50% of the worldwide populations of some avian species.

The potential impacts to waters and habitats within the lake and surrounding the lake environment need to be evaluated in the context of the current lake elevation levels. Dikes for evaporation ponds effectively constrain the waters of the GSL and reduce the extent of the lake's natural littoral zone, which provides the optimum shorebird habitat. In many areas, the natural shore of the GSL slopes gradually from the shore into the water, thus, creating expansive shallow water environments. The shoreline is dynamic and fluctuates as a response to evaporation rates and the inflow, or lack of inflow, of water into the GSL. Diking eliminates the natural shore by creating a very small, rocky littoral zone that deepens rapidly near the shore, benefiting only a few aquatic birds. The state recommends that an Environmental Impact Statement (EIS) evaluate how the presence of the proposed evaporation ponds may affect a significant portion of mudflat and shoreline habitat, thus, affecting resident and migratory waterfowl. A2.1

At low lake levels, the salinity concentration in the North Arm of the GSL increases beyond what wildlife and invertebrates can tolerate; an environment similar to evaporation ponds. Approximately 43% of the GSL is currently composed of developed evaporation ponds and areas with high salinities within the North Arm, which are unsuitable habitats for birds. This is a significant portion of the current total lake and pond surface area and underscores the tremendous value of the remaining available habitats. The creation of additional ponds, especially in the fresh water and brackish water habitats of Bear River Bay, would remove even more habitat from availability to wildlife. A2.2

The presence of selenium and mercury is a serious concern as it has been found within the GSL and surrounding wetlands. Within the last 3 years, the Utah Department of Health has issued a food consumption advisory due to high levels of mercury in three waterfowl species (northern shoveler, common goldeneye and cinnamon teal). These contaminants may enter the food web more quickly from project construction and flushing of brines/salts from the ponds. The state is concerned that these contaminants may enter the water column and move up through the food chain (algae, brine flies, brine shrimp, and birds). We recommend the EIS consider how construction, operation and maintenance of the evaporation ponds could affect contaminants in the GSL. At a minimum, we recommend a rigorous operation protocol that will monitor contaminant levels near areas of physical lake disturbances. A2.3

2. Wildlife Concerns Associated with Clyman Bay

The construction process and proximity of the project to Gunnison Island are likely to disrupt nesting birds. The island supports American white pelican, California gull, peregrine falcon, and great blue heron. There is currently a one-mile "no disturbance" buffer surrounding the island. This buffer was intended to provide security for nesting birds on the island from A2.4

boats or airplanes. The buffer does not take into account the construction or operation of features with noise or lighting exposure, or permanent structures, such as dikes or platforms, which may increase the likelihood of disruption to nesting colonial species. The current dikes in Clyman Bay are approximately four miles away from the island, and the proposed dikes would be even closer. The proximity of newly constructed dikes may provide predators, as well as human trespassers, easier access to Gunnison Island. Pelicans are known to be highly susceptible to any disturbance and will, at times, totally abandon nesting sites as recorded on Hat Island (in the South Arm of the GSL) in the 1960s when pelicans completely left that island due to human disturbances. Gunnison Island is the third largest breeding colony for American white pelicans in North America. The security and protection of this habitat is of great importance to the species. The state recommends that the proposed placement of dikes be evaluated in the context of low GSL water elevations which could provide de-facto "travel corridors" for predators to Gunnison Island. A2.4

Brine flies are the predominant food item for most migratory shorebirds that visit the GSL. During their life cycle, the flies must anchor to bioherms or stromatolites that form on the lake floor. These calcium carbonate structures appear to be essential to the reproductive life cycle of brine flies and are important to the brine shrimp population. At certain times of the year, brine shrimp sustain themselves by feeding on or near these productive structures. The structures are also essential to what is possibly the largest inland U.S. concentration of wintering common goldeneye. Bioherms are only found in a few areas of the GSL and they have been found within the area of the proposed Dolphin Island South Pond. The project area of Clyman Bay, if diked as an evaporation pond, will likely lose its bioherm structures. The state recommends the bioherms in both the North and South Dolphin Island Ponds be mapped to avoid directly or indirectly impacting the bioherms. The lake bottom of Bear River Bay should also be mapped to determine if bioherms may be impacted by proposed evaporation ponds. A2.5

2. Wildlife Concerns Associated with Bear River Bay and Willard Spur

The south end of Bear River Bay is extensively used by Canada geese and is recognized as an important molting area within the Pacific Flyway. Molting areas are typically characterized as large remote areas that are disturbance and predator free, and consequently can be sensitive to increased activity. Canada geese are also long lived and have high site fidelity for breeding, wintering and molting. Due to the established nature of Canada geese, and the rarity of suitable areas for molting on the GSL, the State is concerned that the values of the affected area may not be replaced or mitigated if lost due to the potential disturbances from this project. A2.6

Utah Division of Wildlife Resources (UDWR) data indicates that at lake elevations below 4,200 feet, there is a correlation of declining goose numbers (breeding and molting) with declining lake elevation. This may mean that goose use of Bear River Bay may be particularly sensitive to the amount of surface water available during dryer cycles, and any conversion of the limited amount of flooded area could affect the goose population. Between 1997 and 2001, and again between 2004 and 2006, UDWR conducted waterbird surveys throughout the GSL to gain an understanding of where waterbird species were located during different times of the year and in conjunction with varying water elevations. We urge the Army Corps of Engineers (ACOE) to utilize this data when analyzing all of the project alternatives within the EIS. A2.7

3. Comments on Additional Scoping Information Provided to the Utah Division of Wildlife Resources

Additional information provided to UDWR for review included aerial survey flight data of Bear River Bay. The graphs were difficult to read and did not appear complete. The maps of Shorebirds 2007 and 2008 and Waterbirds 2007 and 2008 do not include late spring/early fall months which would include shorebirds and waterbirds migrating during these months. During prior meetings and conversations with the project proponent, BioWest Consultants and the U.S. Army Corps of Engineers, UDWR personnel requested that flights continue during the late summer, fall and winter months to capture bird use during these critical time periods. UDWR has documented shorebirds migrating through the area in late summer, and ducks and waterbird species utilize Bear River Bay during the fall and winter months. We encourage the ACOE to document all seasons of waterbird use to provide a better understanding of year-round avian use of Bear River Bay. A2.8

The Behrens Trench is now proposed for "Efficiency Enhancement" which would include dredging to create a deeper and wider trench within the North Arm of the GSL. A pipeline to carry the brines may be inserted into the trench to reduce dilution losses of potassium. The trench excavation may necessitate depositing spoil piles adjacent to the trench. As stated above, bioherms have been found within the North Arm area and may be impacted by the proposed dikes. We recommend that the Behrens Trench area, including any areas that would support equipment or contain spoil piles, be surveyed for the presence of bioherms. When bioherms are located, the State recommends that efforts be undertaken to avoid negative impacts. A2.9

4. The Utah Mined Land Reclamation Act

The Utah Legislature in promulgating the Utah Mined Land Reclamation Act found that while mining is essential to the economic and physical well being of the state and nation, mined land should be reclaimed to provide for the subsequent use of the lands affected. Public Notice Number 2007-001212 document under "Other Governmental Authorizations" should include authorization required under Utah Code Ann. §40-8-1 *et seq.* or the Utah Mined Land Reclamation Act. Moreover, the statement found in the Notice that "the proposed project would result in approximately 80,000 acres of permanent adverse impacts to waters" is contrary to the Act. Methods to prevent these permanent adverse impacts and to reclaim the land and water should be explored in the analysis along with the following questions: A2.10

- Should the dikes be removed at the end of mining? Will wave action remove the dikes when no longer maintained? If the dikes remain will they prevent adequate mixing of lake waters?

- What will be the character of the residual salts in the evaporation ponds at the end of mining? Will this material be compatible with the water quality of the lake? Should the residual salts be removed, left in place, or covered at the end of mining?

5. Effects on the West Desert Pumping Project

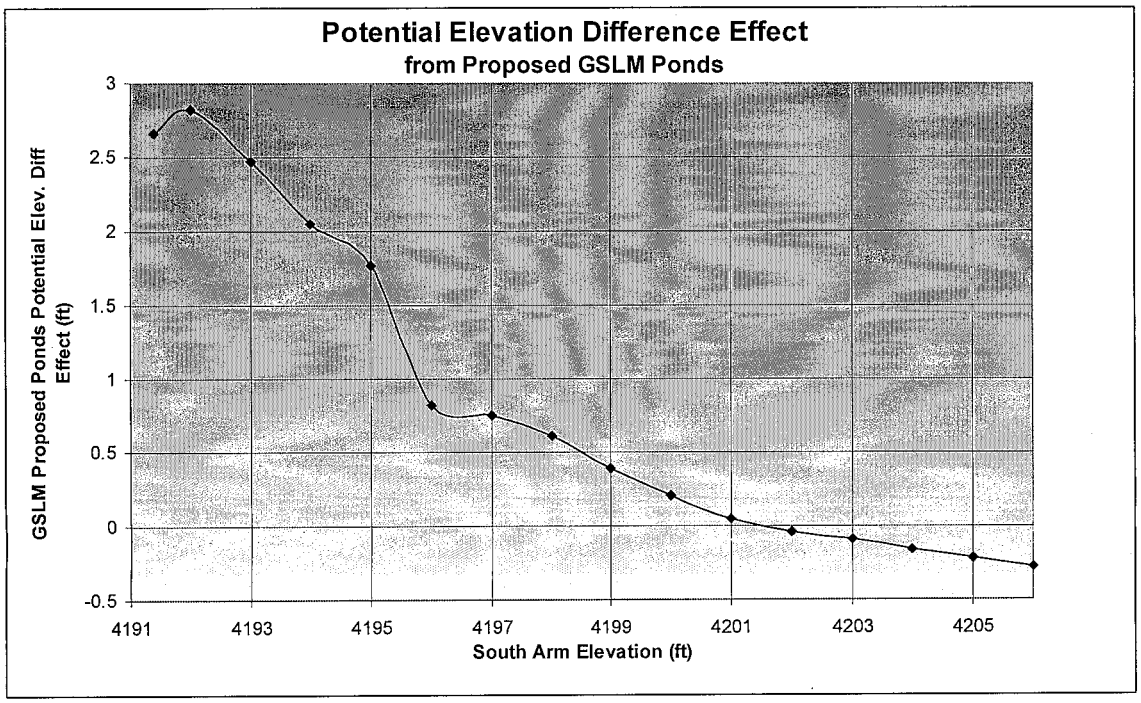
The West Desert Pumping Project was designed, constructed and funded by the State of Utah to control the rising level of the Great Salt Lake. The main features of the project include a pumping station at Hogup Ridge, inlet and outlet canals, four trestles, about 25 miles of dikes, a 37 mile natural gas pipeline, a 10 mile access road between Lakeside and the pumping plant and a shallow 320,000 acre evaporation pond in the desert area west of the Newfoundland Mountains. The pumps were used from April 1987 until June 1989. The Utah Division of Water Resources (UDWRe) is the lead agency with regards to the project and continues to maintain them as an "insurance policy" against future Great Salt Lake flooding scenarios.

While existing ponds built by GSLM since 1989 isolate the inlet canal from the Great Salt Lake, the expansion project would further isolate the inlet canal. If there is ever a need to use the pumps in the future, UDWRe would need assurance that GSL Minerals would breach its dikes, excavate a trench, or do anything else needed to allow water to flow to the inlet canal. Moreover, the expansion area south of the railroad tracks looks like it would intercept return flow from the West Desert Pond. This return flow was an element of the West Desert Pumping Plant Project designed to return salts to the lake. The integrity of the DWRe West Desert Pumping Project permit with the BLM must be maintained which will allow for future operation of all of the facilities. A2.11

6. Potential Effects on Great Salt Lake Elevation

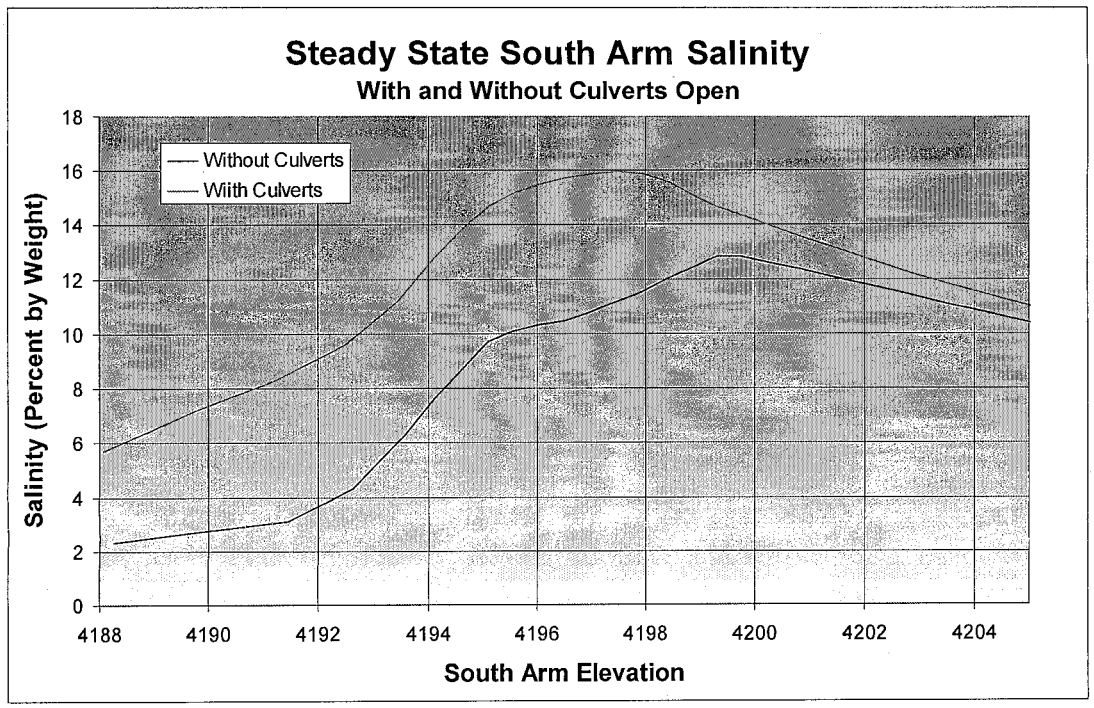
No elevations are given for the top of the new expansion dikes. The proposed dike top elevation should be included in the public notice so that the proposal can be more accurately evaluated. A2.12

The Proposed GSLM ponds lie mostly in the bed of the Great Salt Lake when the lake is near its normal elevation of 4200 feet above MSL. DWRe modeling, during dry periods with the proposed ponds will increase the effective surface area of the lake and tend to lower lake elevations. The figure below shows the potential effect of GSLM pond operation on the Great Salt Lake for an elevation range of 4191.4 (the lowest recorded South-Arm lake stage) to 4206. Somewhere between elevation 4201 and 4202 there is no effect from the proposed ponds. Above that point the ponds tend to increase lake levels. A large increase in elevation difference occurs between 4195 and 4196 as the North Arm drops below the bed of the proposed ponds. Decreased lake salinity will increase evaporation and lower lake elevation. A2.13



7. Potential Effects on the Balance of Salt Between the North and South Arms of the Great Salt Lake

Before the recent deepening of the breach in the causeway in 2002, a number of steady state model runs of the most recent USGS Great Salt Lake model were examined to see how lake salinity would vary at different lake stages for each proposed breach elevation. The figure below shows those results for the present breach elevation of 4193. Two 15-foot wide culverts were placed in the causeway where the lake is deepest to allow dense brines from the North Arm to flow southward. While efforts are made to keep the culverts clean and free flowing, storms frequently leave them plugged with gravel. The figure shown below, modeling predicted steady-state salinities with the culverts free flowing or plugged, shows that below elevation 4197 with open culverts (4199 with blocked culverts) South Arm salinity can decrease with lower lake elevations. This effect is more pronounced below elevation 4195. With the culverts blocked the south arm of the lake would tend to be less saline. If maintaining the salinity of the South Arm is critical, lake elevations below 4194 should be avoided where practical. A2.14



8. Air Quality

The proposed project is subject to R307-205-5: Fugitive Dust, of the Utah Air Quality Rules, due to the fugitive dust that is generated during the excavating phases of the project. These rules apply to construction activities that disturb an area greater than 1/4 acre in size. A permit, known as an Approval Order, is not required from the Executive Secretary of the Air Quality Board, but steps need to be taken to minimize fugitive dust, such as watering and/or chemical stabilization, providing vegetative or synthetic cover or windbreaks. A copy of the rules may be found at www.rules.utah.gov/publicat/code/r307/r307.htm. A2.15

9. Specific Comments

- The Notice states that 1,440,000 cubic yards of fill material will be needed to create the dikes. A mining permit or permit amendment may be necessary to obtain the material and should be considered a connected action in this analysis. Also, the construction and operation of the processing plant next to US Magnesium may need to be permitted under the Utah Mined Land Reclamation Act and should be considered a connected action. A2.16 A2.17

- Any changes or expansion to Great Salt Lake Minerals current operation would likely constitute an amendment or revision to their mining and reclamation plan on file with the Utah Division of Oil, Gas, and Mining. The amended mining and reclamation plan needs to be submitted, reviewed, and approved before the solar pond expansion can be implemented, including adjustments to the reclamation surety. A2.18

- What are the potential long-term impacts to water quality and salinities associated with the removal of salts from the GSL? What are the long-term impacts to water quality and salinities associated with the flushing of salts from the ponds in "pulses" into Bear River Bay and with "moving" the salts from Clyman Bay to Bear River Bay? What will be the A2.19 A2.20-21

impacts to algae, submerged aquatic vegetation, wildlife, brine shrimp populations and each Bay's ecology?	A2.20-21
• How will the expansion pond project affect water circulation patterns within Bear River Bay? How will changes in these circulation patterns affect vegetation, invertebrate populations, salinity and wildlife?	A2.22
• Juvenile pelicans may confuse the proposed ponds with a potential forage site and become weakened and trapped within them until they succumb to the elements. This has occurred at the U.S. Magnesium site along the south shore of the GSL. How will the proponent prevent these events from reoccurring at the new evaporation ponds?	A2.23
• Snowy plover are known to use mudflat habitats, similar to those habitats found along the western shoreline of the GSL, for nesting. Constructed dikes and filling of ponds may eliminate springs within the leased area that provide critical wildlife water sources and potential nesting habitat for snowy plovers. UDWR recommends complete surveys since it is unclear whether the entire newly proposed project area has been appropriately surveyed for snowy plover.	A2.24
• Due to insufficient data in the remote area around Clyman Bay, it is unknown whether the presence of permanent ponds on the western shoreline may impact other wildlife species, such as small mammals and raptors. We recommend surveys be conducted to assess the bird and mammal populations present in the upland habitat around Clyman Bay and adjacent to the western shoreline.	A2.25
• Gunnison Bay is currently open for oil and gas leasing, along with mineral extraction leasing. The cumulative impacts of existing and proposed potential oil and gas wells, in addition to the existing and proposed mineral leasing by GSLM, should be evaluated to ascertain the cumulative impacts to wildlife, lake salinities, water flow and overall North Arm ecology.	A2.26
• The removal of salts from the North Arm should be evaluated to ascertain potential changes to salinities over time and throughout various water elevations. UDWR is concerned over the potential impacts to wildlife and/or the brine shrimp population from long-term and permanent changes in salinities of the North Arm area. Will brine shrimp populations or the harvest of brine shrimp eggs be impacted by salinity fluctuations?	A2.27
• The presence of the evaporation ponds will likely eliminate a large portion of mudflat and shoreline habitat. There will be a reduced area available for emergent marsh or mudflat habitats depending upon lake elevation. What impacts will this have on resident and migratory waterbirds reliant upon these habitats?	A2.28
• How will this loss of habitat affect resident and migratory waterbirds during different water elevations? How will these potential losses be mitigated?	A2.29
• UDWR is concerned with a potential reduction of Bear River Bay and Willard Spur waters, as well as a change in water circulation from dike placement. How will this	A2.30

affect the use of the area by fish populations and subsequently the birds that prey upon fish?	A2.30
• The "islands" of submergent vegetation in GSL, frequently used by resident and migratory waterfowl, may also be affected with dike placement. How will the "islands" change through time due to water flow and circulation changes? How might wildlife be affected by these changes?	A2.31
• What will be the impacts to vegetation communities that provide forage to migratory birds during different times of the year? For example, Sago pondweed is important to many tundra swans in autumn and alkali bulrush seeds are important to common goldeneye in winter. How will these vegetation communities, along with other vegetation communities found in Bear River Bay, be affected by the proposed diking?	A2.32
• Will the increase in dikes create additional habitat for nesting gulls which may, in turn, prey upon other nesting birds?	A2.33
• Will brine shrimp populations be impacted by salinity fluctuations or an increase in salts/contaminant levels created from the flushing of ponds or changes in water circulation patterns?	A2.34
• The West Bear River Bay and the Willard Spur areas, in combination, provide extensive values to migratory game birds that use adjacent areas including the Bear River Migratory Bird Refuge, private hunting clubs, Harold Crane Wildlife Management Area (WMA) and, to a lesser extent, Ogden Bay WMA, Public Shooting Grounds WMA and Salt Creek WMA. How will the reduced acreage of fresh water in the bay affect opportunities for waterfowl hunters directly in this area and on the above referenced lands? Will a potential loss of habitat used as rest areas or fall habitat for waterfowl contribute to premature migration and reduce hunting opportunities?	A2.35

The state appreciates the opportunity to review this proposal and we look forward to working with you on future projects. Please call myself or Judy Edwards of this Office with any questions about this letter.

Sincerely,

John Harja
Director

cc: Todd Adams, Utah Division of Water Resources
Carmen Bailey, Utah Division of Wildlife Resources
Kimm Harty, Utah Geological Survey
Kimberly Kreykes, Utah Division of Air Quality
Susan White, Utah Division of Oil, Gas and Mining

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Ref: 8EPR-N

Mr. Jason Gipson
U.S. Army Corps of Engineers
Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

RE: Scoping Comments for the Great Salt Lake Minerals Corporation (GSLMC) Solar Evaporation Pond Expansion Project

Dear Mr. Gipson,

In accordance with Environmental Protection Agency's (EPA's) responsibility and authority under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, we offer scoping comments for your consideration as you proceed with the Draft Environmental Impact Statement (DEIS) for this project. The Sacramento District Corps will be preparing the DEIS for the authorization for GSLMC's evaporation ponds expansion into waters of the United States, an action which would require a Clean Water Act (CWA) Section 404 permit and Section 10 of the Rivers and Harbors Act 1899 permit. In addition, we have reviewed the United States Army Corps of Engineers' (Corps) public notice to amend the permit application for the Great Salt Lake Minerals Corporation Evaporation Ponds Expansion Project. As stated in the Corps public notice, GSLMC intends to expand the scope of their application from 33,000 acres to a proposed 80,000 acres of waters of the U.S. EPA does not consider this public notice to be a typical 404 permit public notice since the majority of the environmental information necessary for permit evaluation has yet to be developed. As such, EPA reserves its responsibilities under the 1982 Corps/EPA 404(q) Memorandum of Agreement until the publication of the environmental studies in the DEIS.

<u>Purpose and Need Statement</u>

The original scoping public notice issued by the Corps proposed the following purpose and need statement for GSLMC's proposal to meet NEPA and Section 404 of the CWA, "*The overall project purpose is to expand extraction capacity for potassium at the Great Salt Lake Mineral Corporation's facility*." As stated in our original scoping comments to the Corps, EPA finds this proposed purpose and need statement to be too narrow in its ability to allow for a full range of alternatives to be evaluated in the DEIS. This conclusion is based on the proposed purpose and need statement restricting GSLMC to only look for obtaining potassium from their facility in the Great Salt Lake. EPA believes that the EIS purpose and need should be broad A3.1

enough to allow for alternatives that would evaluate other sources of potassium that may have lesser impacts to waters of the U.S. as outlined in CWA 404 (b)(1) guidelines. Also, it is not clear from the overall project purpose statement why the expanded extraction capacity is needed. It is likely that further evaluation of the reasons for the expansion will lead to the underlying purpose for the project and a clearer, less limiting, statement of project purpose. A3.1

Range of Alternatives

The DEIS should present a robust range of alternatives that meets both the needs of NEPA and Section 404 of the Clean Water Act. The Corps should look at alternatives that could avoid impacting waters of the U.S. and look at alternatives that would be the least environmentally damaging practicable alternatives (LEDPA) as required in the CWA 404(b)(1) guidelines. Alternatives that EPA believes should be looked at in the DEIS include: A3.2

- Obtaining potassium from other facilities within or outside the Great Salt Lake region.
- Alternatives that would reduce impacts to waters of U.S. (e.g. reduction in the size of the evaporation ponds, reducing the proposed increase in plant production at the GSLMC processing facility, etc.).

Impacts to Waters of the United States:

The proposed action by GSLMC will directly impact approximately 80,000 acres of water of the United States. This acreage is substantial and will require studies to fully determine the magnitude of the effects on the Great Salt Lake and its surrounding environment. EPA understands that some of these studies are currently underway. EPA would expect that the DEIS include a detailed function and values evaluation of the aquatic resources that are being impacted. A3.3

Compliance with EPA Section 404(b) (1) Guidelines

The technical rigor of the impact assessment approach used in the DEIS needs to be comprehensive and sufficient for EPA to evaluate whether (a) the proponent-preferred project alternative overcomes the presumption against the discharge of fill into a special aquatic site and (b) the project will not cause significant degradation to the environment.

The need for a rigorous evaluation of potentially harmful impacts to the environment is based on identified risks described by the Interagency Team in their initial project scoping comments. Many of those comments focus on the threats of water quality degradation and habitat loss in the project areas. Those threats pose a risk to aquatic life use, and in particular aquatic dependent wildlife, within the broader geographical area. Avian use of the area is considered to be of national and international importance. A3.4

Our initial review of the project and other scoping comments sent to the Corps leads EPA to a strong presumption against the discharge of fill material into special aquatic sites identified within the project area. Our presumption is supported by EPA's Section 404(b)(1) Guidelines. To overcome that presumption, the project proponent must quantitatively demonstrate that an alternative, practical source for their product (potassium sulfate) does not exist in the market place. A3.4

In addition, the project proponent must demonstrate, with known certainty, that the proposed discharge of fill material and associated project operations will not cause significant environmental degradation. A standard for that type of impact analysis is the use of calibrated predictive models. The EPA assumes that both a water quality and a hydrologic model will be used in analysis, and that they will be linked to an avian habitat use model. For example, a water quality model should be used to evaluate risk posed by the possible suspension/discharge of selenium and mercury into the aquatic environment during solar pond construction and operation. The model also can take into account a likely increase in nutrient loading caused by future urbanization in the watersheds that discharge into Bear River Bay. A hydrologic model should be used to evaluate change in water movement and availability within the affected ecosystems as caused by solar pond placement and operation. An avian model should be used to predict impacts to aquatic birds based on direct habitat loss within a landscape context as well as habitat degradation caused by change in water quality and availability. A3.5 A3.6

EPA's review of the DEIS will focus on how well project impact models are calibrated using recently acquired empirical data. This review also will consider whether a project-applicable avian model should be validated using data from other areas of the Great Salt Lake (e.g., Farmington Bay). All assumptions within the models that drive their predictive algorithms will need to be made explicit. A3.7

Compliance with the Corps of Engineers/EPA Federal Mitigation Rule

EPA's preliminary analysis of project impacts suggests that that the project as proposed will cause significant degradation of aquatic resources of the Great Salt Lake. Our prediction is based on past projects in the Great Salt Lake basin; the professional judgment of EPA staff and takes into consideration scoping comments received to date on the project. Given this situation, a discussion of compensatory mitigation becomes relevant to project scoping.

EPA's review of compensatory mitigation proposals is guided by the recent federal Compensatory Mitigation Rule (Rule). Based on the Rule, we will apply the following concepts when reviewing mitigation proposals linked to the proposed project: A3.8

(1) Watershed approach.

EPA's analysis of compensatory mitigation will be structured around the concept of "wetland landscape profiles (profile)." A profile is an accounting of an area's aquatic resource in terms of the abundance, distribution and condition of its classified ecosystem components (e.g., lacustrine mudflats, fringe/slope wetlands, playa, and impoundment wetlands). In other words, a profile is used to account for more than just the acreage of aquatic resources in an area. Ecological theory suggests that maintenance of all profile components is needed to sustain local wetland functions and ensure delivery of valued ecosystem services, including support of avian habitat. A3.8

For purposes of the Draft EIS, a "wetland landscape profile" should be developed for the Bear River Bay and adjacent wetlands. Another profile should be developed for the Gunnison Bay/ Clyman Bay area. Compensatory mitigation proposals can then be evaluated relative to the profiles. We can evaluate and determine whether the overall project can be developed in a way that does not degrade an area's wetland landscape profile (i.e., achieve "no net loss" in wetland quality and quantity).

(2) Consideration of "difficult to replace" aquatic systems.

The proposed project will cause a direct loss of lacustrine mudflats and an associated degradation of the wetland landscape profile for the broader project area. A replacement of lost and/or degraded lacustrine mudflat is not likely practical given the project setting. In the alternative, compensatory mitigation could possibly take the form of an in-kind rehabilitation, enhancement or preservation of other at-risk components of the area's wetland landscape profiles. "In-kind" is defined in this situation as being compatible with an area's wetland landscape profile. For example, impacted lacustrine mudflat could possibly be mitigated through the restoration and protection of large wetland parcels within the shore lands in proximity to the project areas. The Legacy Nature Preserve (Utah Department of Transportation's mitigation project) is an example of the scope of activity that might be needed to prevent significant wetland impacts from implementation of the project as proposed. A3.9

Another mitigation strategy that should be considered relative to the "difficult to replace," issue is adaptive management. Specifically, the EPA will consider whether the DEIS properly describes the practicability of phased project development. For example, the progression of evaporation pond construction can be tied to results from a mitigation effectiveness monitoring program. If monitoring results reveal that impacts from a phase of work exceed mitigation offsets, or cause other unintended consequences, then the authorization of subsequent planned work would be suspended or revoked.

(3) Clarification of aquatic resource function, condition and use.

EPA will rely on two ecological assumptions in its review of project alternatives, project impacts and any proposed compensatory mitigation. Our first assumption is that the project areas are in relative good ecological condition based on observed avian use. In other words, the aquatic areas are functioning at levels typically needed to support avian use. Our second A3.10

assumption is that the occurrence of birds in the project areas is episodic. Occurrence is based on natural fluctuations in water quality and quantity that occur annually and over broader periods of time (i.e., changing Great Salt Lake water level elevations). The proper characterization of such avian use requires that bird occurrence (avian habitat availability) be assessed for optimal Great Salt Lake water elevations at the project locations. An appropriate predictive model should be used to report the frequency in avian occurrence. Optimal bird occurrence (avian use) can be reported by avian class and by species of special concern A3.10

Impact and mitigation evaluation should then be based on a clear articulation of how bird occurrence relates to avian use and the overall aquatic resource condition. Impact and mitigation evaluation also should take into account the full complement of best management practices needed to manage avian predation (e.g., protection of Gunnison Island nesting colonies) and secure desired aquatic resource conditions.

Cumulative Impacts Analysis

The November 28, 2007 comment letter from the Utah Resource Development Coordinating Committee underscores the need for the DEIS to analyze the cumulative impacts of the proposed project. The State recommends the analysis take into account the past 40 years of A3.11 mineral extraction activity in the project areas. In addition, EPA recommends that the DEIS take into account the environmental impacts to the project areas caused by future urbanization within the counties adjacent to Bear River Bay.

For example, an analysis of the effects of urbanization in the Farmington Bay area can be used to predict future environmental conditions in Bear River Bay and associated shore lands. The forecast of future conditions should be based on a plan-trend scenario scaled relative to observed urban build-out trends and conditions in the Farmington Bay region. Future build-out conditions for the counties bounding the project area can be based on existing general growth projections for the Wasatch Front. The cumulative impacts analysis should also explore how past and present urbanization in the Farmington Bay area has placed local avian use at risk from habitat loss and degradation. Local habitat loss in Farmington Bay increases the significance of the future remaining habitat in Bear River Bay and to a lesser extent Gunnison Bay/Clyman Bay. A3.12

In addition, the cumulative impacts analysis should explore the placement of the proposed project and its associated impacts in context with “plan trend” future environment conditions. The future aquatic environment will be at risk from increased nutrient loading into Bear River Bay and from development pressures to fill most higher elevation wetlands (e.g., above 4212 feet lake elevation). The potential risks associated with the building of a Bear River Dam and Diversion Project also should be acknowledged, as well as potential oil and gas development in Gunnison Bay. The results of the cumulative impacts analysis can be described in terms of how the proposed project and its operation will impact the current wetland landscape profile as well as how it will impact a projected future wetland landscape profile. A3.13

Water Quality

The Corps has identified at their public workshops a number of potential water quality concerns that could occur if the proposed expansion was permitted:

- The DEIS should model the effects of the potential change in salinity concentrations in the South Arm due to the increase in salinity densities in the North Arm. A3.14
- The DEIS should evaluate what effects the actions proposed by GSLMC in the North Arm would have on the uptake of selenium, mercury and other heavy metals into the food chain of the Great Salt Lake. A3.15

Air Issues

The Draft EIS should analyze the potential impacts to air quality from the construction, full production, and operation of the solar evaporation ponds and the expanded processing plant. This includes analysis of the project's potential effect on all criteria pollutants under the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments, as well as on air quality-related values in any nearby Class I areas. In particular, the DEIS should address the potential air quality impacts associated with particulate matter (PM10 A3.16 and PM2.5), carbon monoxide, and ozone. Impacts to visibility and the potential for regional A3.17 haze from the project should also be estimated. Mitigation measures for visual impacts should be identified, such as best available control technology and fugitive dust control measures for A3.18 roadways.

Depending on the scope of the proposed plant expansion and alternatives, a qualitative emission comparison approach may not be specific enough to adequately address and predict air quality impacts. While a qualitative emission comparison approach provides a means to compare the total predicted emissions of each alternative to a baseline year, it does not provide any indication of the potential for exceedances of ambient air quality standards or the potential for adverse impacts on air quality related values (ie. visibility) in nearby Class I areas. A qualitative emissions comparison approach may not provide the Corps with the information necessary to predict potential air quality impacts and identify appropriate mitigation measures. Air quality modeling may be necessary. A3.19

Wildlife Issues

The loss of over 30,000 acres of salt flats and open water in the Great Salt Lake is likely to have an effect on wildlife either using this area directly or depending on those resources or ecological processes that would be lost or changed due to the GSLMC proposal. As stated in the A3.20 meeting with the Corps, federal and state wildlife agencies, GSLMC studies will need to be undertaken to characterize the baseline conditions of the area. Within the Clyman Bay area, particular attention will be needed in evaluating the impacts to the snow plover and the white A3.21 pelican colony on Gunnison Island. Impacts to avian use along the northern shoreline that would be impacted by the expansions of the ponds, the shoreline above GSLMC's proposal and A3.22 Dolphin Island also needs to be fully evaluated. In Bear River Bay area, a valuable habitat for open water bird use, special attention will be needed to evaluate the effects on bird use by the A3.23

potential change in the fresh water exchange between Willard Spur and Bear River. The impacts	A3.23
to shrimp productivity and impacts to Canada geese during molting will also need to be addressed.	A3.24-25

EPA is very interested in assisting the Corps with formulating the project to reduce environmental impacts, where practicable. Please contact Mr. Dick Clark at (303) 312-6748, clark.richard@epa.gov, or me at (303) 312-6004, with any questions you may have concerning these comments.

Sincerely,

//Osb RC //

Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection
and Remediation

Bcc: Dick Clark, EPA Region 8
Julia McCarthy, EPA Region 8
Jill Minter, EPA Region 8
Richard Sumner, EPA U.S.
Environmental Protection Agency
200 SW 35th Street
Corvallis, OR 97333

Printed on Recycled Paper

Ltr # F1

I want to express my support for the Great Salt Lake Minerals (GSL) Solar Ponds Project. Supporting this project will ensure the creation of additional good-paying jobs, grow the local economy and provide farmers with a critical natural nutrient.

Great Salt Lake Minerals Corporation
A Compass Minerals Company

F1.1-3

GSL is one of the largest producers of natural "sulfate of potash" (SOP) in the world. GSL's proposal will help meet farmers' needs for this vital natural fertilizer used for fruits, vegetables, and other important crops. GSL has operated on the lake for 40 years. They employ 330 full time Utah residents and contribute $9 million in royalties and taxes to the local and state economies each year. I strongly encourage the approval of GSL's Solar Ponds Project.

F1.4-6

PRINT NAME: DAVID J. PARKER **SIGNATURE:** David J Parker

ADDRESS: 1378 NORTH 550 EAST **TOWN:** BOUNTIFUL **STATE:** UT **Zip:** 84010

PHONE NUMBER: 801 292 3517 **Email:** parkernav@msn.com

Please join our growing list of supporters. Visit www.gslfuture.com for more information.

APPENDIX F

PUBLIC COMMENTS DURING SECOND SCOPING PERIOD

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Allen L Vance **Address:** 1557 Emerald Hills Dr
Bountiful UT 84010

Representing (optional): _____ **Self** ✓ **Other** (please specify) _____

Comments or Concerns:

I am retired, I worked with leasable minerals most of my career and specifically with solar pond recovery east of Wendover south of the freeway. My observations over the years have been pleased to see valuable products extracted from such a rich resource as the Great Salt Lake brine waters provide. My experiences have been to observe cohabitation of birds and animals while mining operations progress. We need the resource, we need the jobs it provides and Utah is fortunate to have such wide spread products available at the benefit to so many - nearly everyone benefits. I am all for the present proposals. 1.1 1.2 1.3 1.4

Allen L Vance

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Bob Carter **Address:** 3507 So. Huntington Dr. Bountiful, UT 84010

Representing (optional): X **Self** **Other** (please specify) Excellence to Market

Comments or Concerns:

I view this expansion as a positive step toward economic development in the state. The proposed area of land is mineral rich and non-impacted by wildlife. The SOP produced from the lake provides fertillizer for crops to maximize yield and feed more people. GSL has proven their ability to function in a safe and environmental friendly capacity and provide jobs and tax's to support our communities. I am a CEO of two local companies + the governor challenges us often to stimulate growth for the state. I recommend this is approved at a unanimous level.

2.1
2.2
2.3
2.4
2.5

Bob Eriksson
1973 S. 100 W.
Clearfield, ut. 84015

Very Interesting Studies. We can only imagine what the weather will be like the next 50 years or so. I am really impressed with the depth of work put in to determine the effect of the ponds on the future. I understand that this is an important step in approving the expansion. I hope all the details will be worked out to allow the expansion 3.1

Thanks for your work

Bob Eriksson

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Brandi Noble **Address:** 1341 N 325 E
Layton, UT 84041

Representing (optional): _____ **Self** **Other** (please specify) UMMA, UBA, UWA

Comments or Concerns:

Utah derives a large portion of revenue from hunting, fishing, hiking, skiing and other outdoor activities. The state has a reputation for the natural beauty and plethora of wildlife. Big business and a growing population has already diminished what nature has provided, it's foolish to advocate further erosion for one company that's looking to make a few extra dollars. 4.1

I do what I can to minimize my negative impact on the environment so I can leave a lasting legacy for future generations. I expect the preservation of water quality, air quality, and food for native species to be a priority to our state and national officials. 4.2

I encourage GSLMC to explore alternatives with less environmental, social and economic impact. 4.3

I request a public hearing to discuss these issues and explain the environmental impact further. 4.4

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Chris Slocum **Address:** 869 E. 700 S.
Clearfield UT 84015

Representing (optional): X **Self** **Other** (please specify) Utah mud motors Association

Comments or Concerns:

The purposed area on the Willard spur/Bear River Bird Refuge concerns me due to it being a bird resting area in the spring and fall. The area is not heavily used so it provides great rest areas, even when hunters are out there. 5.1

The Corp. wont build any ~~res stor. dam~~ damm's out here to make new water areas so why would they destroy some, even if they are seasonal. 5.2

Is this area not a flood plain for the great salt Lake. What happens when things flood again. These are large areas that will no longer be there to take some of the flood waters. 5.3

Please for give the misspelling.

Ltr # 6

I want to express my support for the Great Salt Lake Minerals (GSL) Solar Ponds Project. Supporting this project will ensure the creation of additional good-paying jobs, grow the local economy and provide farmers with a critical natural nutrient. 6.1-3

Great Salt Lake Minerals Corporation
A Compass Minerals Company

GSL is one of the largest producers of natural "sulfate of potash" (SOP) in the world. GSL's proposal will help meet farmers' needs for this vital natural fertilizer used for fruits, vegetables, and other important crops. GSL has operated on the lake for 40 years. They employ 330 full time Utah residents and contribute $9 million in royalties and taxes to the local and state economies each year. I strongly encourage the approval of GSL's Solar Ponds Project. 6.4-5

PRINT NAME: DAVID J. PARKER **SIGNATURE:** David J Parker

ADDRESS: 1378 NORTH 550 EAST **TOWN:** BOUNTIFUL **STATE:** UT **Zip:** 84010

PHONE NUMBER: 801 292 3517 **Email:** parkernav@msn.com

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U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: DAVID J. PARKER **Address:** 1378 NORTH 550 EAST
BOUNTIFUL, UT 84010

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I HAVE A DEGREE IN "COMBINED SCIENCE" FROM UTAH STATE UNIVERSITY AND HAVE TAUGHT PHYSICS AT USU; MATH IN THE PUBLIC SCHOOL SYSTEM AND AIR COMMAND & STAFF COLLEGE AT MAXWELL A.F.B., ALABAMA

I AM TOTALLY CONVINCED THAT THE GREAT SALT LAKE MINERALS CORP. SOLAR EXPANSION PLAN WILL BE HIGHLY BENIFICIAL FOR THE STATE OF UTAH 6.6

I FORSEE NO DETRIMENTAL EFFECTS

Ltr # 7

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Del Calliotte **Address:** 1161 South 300 West Bountiful Utah

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

After reviewing the Information Packet and various displays, I can find no reason why this proposed expansion should not be approved. Recommend Approval. 7.1

Del Calliotte 6/4/09

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: DON JOHNSON **Address:** 1071 E 250 NO
BOUNTIFUL
UTAH 84010
801-808-1578

Representing (optional): _____ **Self** **Other** (please specify) _____
DESIGN DEVELOPMENT

Comments or Concerns:

GO FOR IT. I HAVE BEEN THERE &
IF IT CAN BECOME FINANCIALLY BENEFICIAL 8.1
— DO IT!
(ELEMENT #3)
IF LITHIAM IS POSSIBLE - WE NEED IT.

GOOD LUCK

Don

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: JAY VANCE

Address: 594 Sidler Drive
North SALT LAKE, UT
84054

Representing (optional): _____ (Self) **Other** (please specify) _____

Comments or Concerns:

Thank you for involving the public and for taking a careful look at the impacts of this project. So far I am very supportive of this proposal. This appears to be a good way to harvest these resources that are beneficial to use for plant growth and food production. I will be interested in looking at any alternatives and their impacts. 9.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: John Ray

Address: 168 Rolling Hills Dr.
Centerville, UT 84014

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

1. Destroying over 110 square miles of lake habitat to grow organic food seems not only an amazing irony but is, for various reasons, also legally insupportable.

- The scale of the project, virtually all of it on jurisdictional wetlands, fails to satisfy the criteria of the Clean Water Act. 10.1

- The filling of wetlands either with material for dikes or concentrated salt brine and the resulting chemicals/minerals lacks adequate economic justification. The CWA is pointless if a project of this magnitude is permissible. The end product is otherwise available. 10.2

- It would be impossible to mitigate the loss of this habitat. 10.3

- At different lake levels, the impacted areas have varying levels of significance. As a result, their total footprint may significantly understate the impact. 10.4

- The project would have effects far beyond the project footprint by effecting lake level, salinity, habitat mix and contamination. 10.5

- Certain species will be disproportionately affected. 10.6

-

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Josh Noble

Address: 1341 N 325 E
Layton, UT 84041

Representing (optional): _____ **Self** **Other** (please specify) UMMA, UBA, UAA

Comments or Concerns:

I request a public hearing to discuss the impact of the proposed GSLMC production expansion on the Great Salt Lake on: 11.1

- waterfowl habitat loss & shift of population
- food chain disruption 11.2
- predator access to nesting & roosting sites 11.3
- loss of public access to waters & wetlands 11.4
- effect of 5 million cubic yards of fill planned to be discharged into water 11.5
- exploration of alternatives 11.6
- reasonableness of a 150% increase in current operations area 11.7

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Robert Boyle **Address:** 3104 E Tanglewood
Layton, UT

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

It appears that there are no notable dangers to the ecosystem. 12.1
This project will provide additional jobs in the area. The Corps has conducted an in depth study to date. 12.2

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Robert M. Eggett **Address:** 555 N. 400 W. #21, Orem, Utah 84014
801-295-3153

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

We definitely need the water stored for farmers, furthermore, I know that this project will help the 13.1
economy of Utah. You mentioned that 13.2
you would be turning lots of people. Please give me some consideration as far as a possible employee. My last question is why is it so expensive? The tax payers need their money. I am a tax payer.

In conclusion if you have an opportunity to interview for an employment opportunity, I would sure be available for that chance.

Thank

Robert M. Eggett
PH # 801-295-3153

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Tyson Rasmussen

Address: 612 E 600 So
Layton UT

Representing (optional): _____ **Self** **Other** (please specify) UMMA

Comments or Concerns:

I would like to request a public hearing to discuss the habitat losses & shifts, disruption in the food chain, ect 14.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Davis County Library*
725 South Main Street
Bountiful, Utah

June 4, 2009

Comment Form

Name: Werner Ruemmele **Address:** 1217 N. 950 E
Bountiful UT
84010

Representing (optional): Self **Other** (please specify)

Comments or Concerns:

A massive project to use the G.S.L. for its mineral potential. 15.1
I am all for it!

W Ruemmele

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Aaron Gibby

Address: 92 w. 870 n.
Sunset ut. 84015

Representing (optional): X **Self** **Other** (please specify) utah Sportsman

Comments or Concerns:

I feel that the proposal of the new dykes is going to effect the water levels Wether it be higher or lower. It could cause [redacted] issues in the reproductive of waterfowl and shore birds as well as vegatation like Saga pond weed & Salaconia that is critical for feeding those birds. 16.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Alice LaRue

Address: 5544 W 1400 N
Ogden, Ut 84404

Representing (optional): Self

Other (please specify) Warren-Wardell Cemetery

Comments or Concerns:

Thank you for Visual Charts etc. I believe the expansion would be a good thing. More jobs, economy and etc. It does not appear to have any detrimental effects in the proposal. 17.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: [illegible]

Address: 5070 S. 1475 E 4-A
Ogden Ut 84403

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

I think this is a wonderful idea. I hope it goes through. You have to be completely unfamiled to deny this project. Its the best use of our natural resources here in Utah. Lets keep this beautiful state at the top of the union. Bring more jobs & help out others that are not doing as well. Good Luck with this process going through! 18.1

Ltr # 19

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Becky McShane **Address:** 3025 Tyler Ave.
Ogden, UT 84403

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

Great Salt Lake has experienced more and more pressure from surrounding factors: Legacy Highway, development of property around the shores of the lake, and now a request to expand mineral production. The lake is one of our area's greatest resources—educational, climatological, spiritual, cultural, and natural. Any further impacts to this place must be worth the sacrifice. A corporation's profit is not worth this sacrifice. 19.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Blynn Simmons **Address:** 1990 W. 3300 So
Ogden, UT 84401

Representing (optional): X **Self** & **Other** (please specify) Northshore LP. Mineral Resources International Inc. (MRI)

Comments or Concerns:

As the attorney representing MRI & Northshore LP our my Intrinsic supplement come directly from the Brine on the North Arm of the Great Salt Lake w/ our solar evaporation food grade Harvesting operation. Since we only provide food grade product as our primary product this expansion (especially the largest portion) is directly in opposition to our operation & we are opposed to such a grand grant of acreage to G.S.L.M. 20.1

As a citizen of this area I also am greatly concerned about the impacts this will have on wildlife, the surrounding ecosystems and the agriculture that depends on the lake w/ be affected. 20.2

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

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Comment Form

Name: Brandon [illegible] **Address:** Ogden

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I support the expansion plan because Weber and surrounding county's need more job opportunities. I feel that the expansion would not make a huge impact on the environment but would like to see the conclusions of the research. 21.1 21.2

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

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Comment Form

Name: Bruce Ferre **Address:** 4618 W 2800 S.
Ogden UT 84401

Representing (optional): ✓ **Self** **Other** (please specify) I'm a Commissioner on the Western Weber Co. Planning Commission

Comments or Concerns:

Interesting information. I would have liked to have talked to some opposing parties i.e., "Friends of the Great Salt Lake". Otherwise it looks like a good proposal. 22.1

Try & have some alternative points of view next time.

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Comment Form

Name: Candace Barnes **Address:** 2211 N. 1200 W.
Clinton Ut. 84015

Representing (optional): _____ **Self** **Other** (please specify) GSL / Father

Comments or Concerns:

GSL has been a wonderful career for my Father and our family. We are in complete support of this expansion. 23.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

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June 9, 2009

Comment Form

Name: Chad L Russell **Address:** 722 E 5400 So
So OGDEN, UT 84405

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

I'am For the EXSPANSION OF G.S.L. This Company HAS Done nothing But Good For the community AND FAMENS ALONG with LOCAL GOVENMENT AS it SUPPLIES ROAD SALT ALSO. WHEN DEVELOPMENT ~~[illegible]~~ TAKES PLACE IN A CITY They Do what EVER it TAKES TO Get it Done with sometimes no Regard For People! There is nothing out there to Hunt on Prevent this From TAKING PLACE!! 24.1

Chad Russell

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

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Comment Form

Name: Charles Willis **Address:** 5670 S. 1475 E 4A
Ogden, Utah 84403

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

I think this whole project is a great idea. I see it as the true use of solar power, unsubsidized like panels and very efficient. 25.1

There are alot of people in the world that need food and the best way to feed us all is with efficiency. Fertilizers along with other technologies provide more food at less expense and energy consumption. These resources in our state need to be used for the good of the nation and for the econic benifit to Utah. I'm an outdoorsman and have backpacked and hiked around the world. One of my trips was hiking the entire Appalatian trail from Georgia to Maine. I understand the balance of nature, use of resources and caring for the natural world. The impact of this project seems extremely small if any exists. and the benifits are substantial. If this project was denied I wonder what project would ever be judged acceptable! As far as birds, when a bird is born it sees it's surrounding, whether man made or not 25.2

25.3

(over)

accepts the surroundings as natural since it's all it's ever known. So I see no impact with birds since they don't nest in these areas and can fly or land as they wish and as they do now. I see the dikes that make the ponds as landing places and walk ways for mammals that are now existant now. I noticed that the wildlife sightings information shows all sightings on existing dikes. I see a very possitive impact for wildlife as a result of this project. I say the sooner, the better.

Ltr # 25

25.3

fold over

BIO-WEST, Inc.
1063 West 1400 North
Logan, UT 84321

place postage here

Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

fold over

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

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Ogden, Utah

June 9, 2009

Comment Form

Name: Chuck Harsin **Address:** 4620 So 500W

Representing (optional): ✓ **Self** **Other** (please specify) Widow Maker Boat Co

Comments or Concerns:

As far as the acreage in BB Bay it is misrepresented as a playa bay because when the water levels are high enough to flood these flats they are absolutly covered with Salicornia, Sego pond weed and various other foods key to Staging and Migrating Water fowl and Shore birds. 26.1

On most days in Mid November you can go for an air boat ride across these Flats and see hundreds of thousands of Ducks, Geese, Tundra Swans and various Shore birds. Some of which include Canvas backs and Blue bills (both of whose numbers are on a steady decline), Most of the 35000 - 45000 Tundra Swans that winer there each year. Many Red heads whose numbers are down Significantly 26.2
Not to mention that BB Bay is one of the most important Rest Stops in the Pacific Flyway for the American Pintail who despite Sportsmans Valliant efforts slips lower every year. I could go on for hours and hours on this but Most importantly: I AM against Every part of this Proposal!

AND I VOTE!

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Ogden, Utah

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Comment Form

Name: Daniel Bedford **Address:** 2472 Custer Ave
Ogden UT 84401

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

I am concerned that future levels of the GSL may be different from the historical record, due to population increase along the Wasatch Front (thus more consumptive use of freshwater) and due to climate change — a reasonable guess of 20-30% reduction in surface flows is modeled for northern Utah (temperature increases evaporate more water, so even if rainfall increases, the overall net effect of climate change is likely to be less water in the rivers). 27.1
If 1963-like GSL levels become the norm, how will the pond expansion affect predator access to Gunnison Island? This island is home to a critically important population of pelicans, and surely must be protected. It is essential to consider the impacts of the pond expansion under likely near-future conditions, not simply relying on the past as a guide.

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Comment Form

Name: Dave Meacham **Address:** 2859 N 850 E
N. Ogden, UT 84414

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

I am in favor of the land around the lake to be used for GSL expanding their process. This will be a great economic benefit to the State, and provide for additional jobs. I do not think this will impact the habitat in the area. The amount of wild life out there is meager at best. And there is plenty of room for birds etc. In fact the creation of the pond or reservoir area will be beneficial to local birds + wild life.

28.1

28.2

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Comment Form

Name: David Dewey

Address: 3246 Newcastle Cir
Syracuse, UT 84075

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I'm concerned about infringing on the natural shoreline of the lake. The existing ponds have already created a scar and this will drastically increase that, taking away from the natural beauty of the lake. If this is allowed, when & where will it stop? I believe the existing borders of the lake should be preserved. 29.1

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Comment Form

Name: Don Judkins **Address:** 1590 N. 4150 W
Ogden, Ut 84404

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

GSL has and will continue to produce products from the lake. they have a constant concern of the lakes wild life. 30.1

The evaporation will happen & it will be good to create Jobs for people here in Utah.

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Comment Form

Name: Emerald 3rd grade **Address:**

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

My daddy works here. his name is Stephen Joyner he is a great person I think he works hard each day. And wow does he get dirty from his Job. but im glad he works here!

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Comment Form

Name: Gaylynn Burton **Address:** 5031 Glasmann Way
Ogden UT

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

Thank You for providing interesting information on the proposed expansion for GSL. I think the expansion would provide a great opportunity to Northern Utah in the way of providing more jobs and resources, while there would be minimal if any effect on wildlife and other natural resources. I support the expansion. 32.1

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Comment Form

Name: Gerrine Killian **Address:** 5581 S. 850 E
Ogden Ut

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I am not a property owner that has any personal interest in this expansion - However I am concerned about the well being of my community and state.

GSL - Compass has been a responsible company employing many people in Weber Co, I think it is resonable that they would want to expand and their expansion would then provide meaningful jobs for residents here. 33.1

Thus I appreciate the complexity of the studies displayed here tonite, the considerations that have taken place at some cost.

It is my consideration that this expansion would benefit the people of this community and provide needed products. 33.2

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Comment Form

Name: Janet Sudkins **Address:** 1590 N. 4150 W
Ogden Ut. 84404

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

I think this expansion project is a good thing for all people concerned. It will provide more jobs for the State and will not hurt the environment. 34.1

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Comment Form

Name: Jesse Gardiner **Address:** 4628 S 3950 W
Roy, Ut 84067

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I do not want to see this project go underway. 35.1

I feel like GSL has no Right to dyke off a public area like the Great Salt Lake, The 35.2

areas purposed would greatly impact the wildlife especially waterfowl. They use the lake for food, safety, and nesting in the yearly migratory path. The waterfowl in our State has been effected already with low water levels and the development of marshes and farmlands. I feel like every acre that is lost is like a knife in the back of our migratory birds. 35.3

And the willard spur is a well used by the airboat association and we use the lake to our recreation and we spend our time and money to conserve the areas and waterfowl for our use. 35.4

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Comment Form

Name: John Larson **Address:** 1739 Calhoun
Ogden UT
84401

Representing (optional): X **Self** **Other** (please specify) MRI

Comments or Concerns:

How can the State support the interest of one private company and not offer this same opportunity to other private companies? 36.1

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Comment Form

Name: Justin Kinghorn **Address:** 5038 S. Viking Dr
Ogden UT 84403

Representing (optional): X **Self** **Other** (please specify) Utah Sportsman

Comments or Concerns:

I oppose this project because public hunting ground is already in short enough supply as it is. Once this ground is gone we can't get it back. 37.1

This project will also affect waterfowl & shoveline birds feeding habitat. The Public & wild life cannot afford to let this project happen. 37.2

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Comment Form

Name: Keith Ashdown **Address:** 193 E Pleasant View Dr
N. Ogden Ut

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

I have spent many nights out on the west side of the lake. I would take the Boy Scouts out to see the B-17 crash site. I can say it is a very good place to let some one make pounds. I know this is all about making money. But it allso give us as people the opertunity to help feed people all over the world. I think this project should be and must be done to help the world grow the needed food. I do not know how many more tons of food can be grown but one ton is better than none. 38.1 38.2

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Ogden, Utah

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Comment Form

Name: KEN WARNICK **Address:** 5772 S. 1075 E
OGDEN, UT 84405

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

FOR OVER 40 YEARS, GSL AND ITS EMPLOYEES HAVE MADE A SIGNIFICANT CONTRIBUTION TO THE STATE OF UTAH AND TO THE WORLD IN THE PRODUCTION OF A VALUABLE AND NECESSARY COMPONENT TO THE PRODUCTION OF THE WORLD'S FOOD SUPPLY - THEY HAVE CONSISTENTLY BEEN GOOD STEWARDS OF THE RESOURCES OF THE GREAT SALT LAKE - THEY HAVE ALWAYS BEEN COOPERATIVE WITH OTHER USERS OF THE LAKE WHETHER THEY BE INDUSTRY OR ENVIRONMENTAL CONCERNS - THIS EXPANSION IS AN IMPORTANT NEXT STEP IN CONTINUING TO PROPERLY USE THE LAKE'S RESOURCES - I URGE THE ACOE TO APPROVE THE PERMITS REQUIRED FOR THIS PROPOSED EXPANSION. 39.1

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Comment Form

Name: Kevin Smith **Address:** 3206N. Pelican Drive
Farr West Utah 84404

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

I support the GSL expansion. I have been an employee there for almost 28 years and have always known them to be a great stuard of the lake. I believe they have a strong concern for doing the right things and hope to see the expansion go through 40.1

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Comment Form

Name: LARRY MUENICH **Address:** 1566 Sunview Dr. Ogden, UT 84404

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

1. Surface area of lake will be reduced which may compound the effects of high/low water years. 41.1

2. 8000 acre expansion in Bear River Bay may alter the water flow, depth & area and negatively impact the bio-habitat and wildlife in the refuge and surrounding area. 41.2

3. The salinity, PH, and chemical composition of the lake may be altered to the long term detriment of the 100's of species that currently exist. 41.3

4. Increased noise, traffic, and human intrusion may negatively impact use, nesting, etc. 41.4

5. The proposed expansion may negatively impact 1000's of hunters, birdwatchers, photographers, etc. for the benefit of a few. 41.5

6. The additional $5M tax revenue and 50 jobs are not worth any negative impact either short or long term and there is no provision to undo the negative impacts should they be determined in the future. 41.6

– It's just too valuable to risk screwing it up!

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Comment Form

Name: Larry Strong **Address:**

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

I feel that the expansion is vital to our Local economy
When other companies are down sizing GSL is trying 42.1
to Expand. Trying to strengthen its possition. It
has proven in the passed its concern with being
a good Neighbor, trying to make sure that they meet
or do better than required in the way they
impact the environment, there are birds living 42.2
+ nesting just out side the dikes where there
wasn't ~~before~~ any before, the proposed areas do not
effect hunting, bird, fish recreation, this would put
mostly unproductive Land and turn it into industry
+ jobs. strengthening the local economy + saving 42.3
up the futures of many families that are already
employed by GSL.

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Comment Form

Name: LAVERA L. PARRIS **Address:** 3895 Quincy Ave
Ogden UT 84403

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

Personally I am for more jobs in the area, so citizens of Utah can make a decent living and support there families. 43.1

It appears to me the environmental impact is in an area where, possibly only a few would ~~be~~ have to adjust and for only a short time – construction time. 43.2
It would seem the benefits would outweigh any inconveniences.

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Comment Form

Name: MARK TREMONT **Address:** 336 Church st
Layton, UTAH 84041

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

I believe this expansion should be allowed, looking at displays talking to Representatives 44.1

the impact to wildlife + visual aspects is extremely minimal. I have been employed by a contractor working at GSL and am familiar with the operation + area 44.2

In light of the state of the economy the creation of jobs and tax Revenue is more important than ever 44.3

Please allow this EXPANSION to go forward.

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Comment Form

Name: MARK WORKMAN **Address:** 2257 OAK FOREST
LAYTON, UT 84040

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

THE "ONLY" CONCERN I HAVE IS DOLPHIN ISLAND.
THAT IS BECAUSE I DON'T KNOW WHAT THE END RESULT
WILL BE. IF IT IS PROTECTED, I HAVE NO CONCERNS. 45.1

I BELIEVE THE TRADE OF LEASES AROUND PROMOTORY
POINT IS A VERY MAJOR "WIN-WIN" FOR EVERYONE.

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Comment Form

Name: Melissa Truscott **Address:** 5924 S. 2700 W.
Roy UT 84067

Representing (optional): _____ **Self** **Other** (please specify) GSL

Comments or Concerns:

GSL has been a great career for our father and our family and I support the expansion. 46.1

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Comment Form

Name: Pat Reynolds **Address:** 2147 West 5025 So
Roy Utah 84067

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

Great Salt Lake Minerals has been a good citizen of the area for many years. They have provided high paying jobs and have worked hard to have little impact on the enviroment.

I support their proposed expansion. The employment opportunities are needed in this area. The help to the Weber County economy would be tremendous.

I believe in preserving our enviroment but I also believe in supporting what is good for "people." We are also important. 47.1

Please move forward with the needed permits.

Thank you.

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2250 South 1200 West
Ogden, Utah

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Comment Form

Name: Paul H. Johnson **Address:** 715 S. 400 E.
Farmington, Ut 84025

Representing (optional): X **Self** **Other** (please specify) Attorney for North Shore Limited Partnership and Mineral Resources International, Inc.

Comments or Concerns:

I live in Farmington and work in Ogden as assistant in-house counsel for North Shore Limited Partnership and Mineral Resources International Inc. I have three major concerns about the impact of this project — two professional and one personal. My two professional concerns are the impact this project will have on my employer.

It would appear that this project would impact the level of the Great Salt Lake drastically, bringing it far below historic lows. This would most likely put my employer out of business, because of the increased cost of pumping water from the Great Salt Lake to its mineral processing facility. North Shore Limited Partnership has the only food grade processing facility for minerals from the Great Salt Lake to the best of my knowledge. ~~North~~ Mineral Resources → (page 2)

48.1

48.2

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2250 South 1200 West
Ogden, Utah

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Comment Form

Name: Paul H. Johnson **Address:**

page 2

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

International, Inc. is a manufacturer of natural food supplements, high in trace minerals, ~~from~~ as natural minerals ~~as~~ harvested and processed from the Great Salt Lake. 48.2
It would appear that a human consumptive use of Great Salt Lake water should have priority over other uses. Over the past 10 years especially, Mineral Resources International Inc. has steadily increased its sales, with current sales in the $3 mil. range. With continued growth it could perhaps increase its sales by 10-20 times its current level in the next 10 years. ~~[illegible]~~ Ample adjustments or consideration to GSL plans should be made to preserve this industry and this business of food grade mineral supplements derived from the Great Salt Lake. 48.3

page 3 →

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Comment Form

Name: Paul Johnson **Address:**

page 3

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

A significant lowering of the ~~to~~ water level of the Great Salt Lake through this project — through government permit — would also appear to be the equivalent of a "taking" of the rights of those owned by NorthShore Limited Partnership and Imperial Resources International, Inc., without adequate compensation. I am greatly alarmed ~~in~~ by the current trend of promoting the interests of one business entity at the expense of another business entity under the guise of being in the public interest. 48.4 48.5

Finally, as a resident of Farmington, I am concerned ~~on~~ about the impacts on the Great Salt Lake ecosystem a project of this magnitude could create — with resulting changes in weather and other ramifications. GSL should be required to bear the full cost of the impacts this project will cause to everyone else — business and 48.6 48.7

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Comment Form

Name: Paul Johnson
page 4

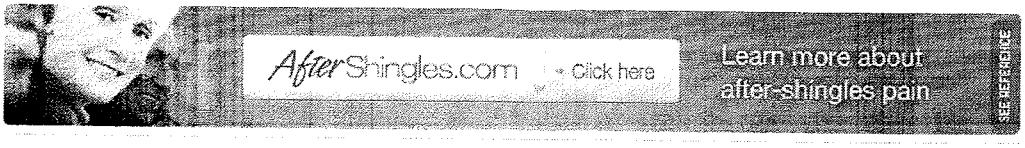
Address:

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

personal. My query is that their current proposal does not provide for GSL to pay all potential costs to society of this project. 48.7

I have enclosed materials concerning just one of the products manufactured by Mineral Resources International, Inc — "elete" an electrolyte product with many potential, beneficial applications.



Medicine for the Outdoors

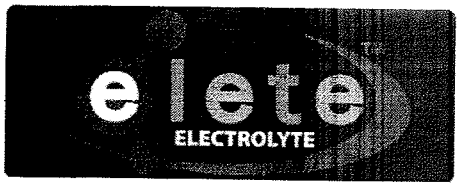
Paul S. Auerbach, MD, MS, FACEP, FAWM
Wilderness Medicine

Monday
Jun 8
2009

Electrolyte Additives for Hydration

Paul Auerbach, M.D.

Wednesday, January 28, 2009



The current issue of the journal *Wilderness & Environmental Medicine*, published by the Wilderness Medical Society, has a number of very interesting articles of significance to the layperson outdoor medicine enthusiast.

"Effects of an Electrolyte Additive on Hydration and Drinking Behavior During Wildfire Suppression," by John S. Cuddy and his colleagues (WEM volume 19, pages 172-180, 2008), describes a study designed to compare the effects of a water plus electrolyte solution versus plain water on changes in drinking behaviors, hydration status, and body temperatures during wildfire suppression activities. In this particular study, eight participants consumed plain water, and eight participants consumed water plus an electrolyte additive (Elete by Mineral Resources, Ogden, Utah) that contained magnesium, sodium, chloride, potassium and sulfate. The participants were provided specially outfitted backpack hydration systems with three-liter capacity from CamelBak (Petaluma, California).

During the measurement period, the participants were monitored for volume of fluid consumed, body weight, core, and skin temperatures. Work output was measured, as was the environmental temperature. The results indicated that all things being equal, the major difference noted between the water group and the water plus electrolytes group was that a remarkably lower fluid consumption (approximately 3.3 liters per day) was noted in the water plus electrolytes group. This suggests that supplementing water with electrolytes might reduce the amount of fluid necessary to transport and consume during extended activity. This would minimize excessive weight, which in and of itself might contribute to a lessening of fatigue.

In this study, the amount of fluid consumed was at the discretion of the participant, so was presumably driven by thirst. It would be very interesting to replicate this study in other situations where rehydration is important, such as high altitude travel, competitive sports, and recreational sports. It would be important to control for as many variables as possible, such as beverage temperature, taste, food intake, and so forth. It would also be useful to determine if this information has any applicability in a survival situation.

Tags: electrolyte additive, hydration, wildfire, wilderness medicine, outdoor medicine, healthline

Labels: electrolyes, fluid and electrolytes, fluid replacement, hydration, rehydration

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Health Matters - Health Expert Biography

Paul S. Auerbach, MD, MS, FACEP, FAWM

Professor of Surgery in the Division of Emergency Medicine at Stanford University Medical Center; Chief Medical Officer and Chair of the Medical Advisory Board for Healthline; A Founder of the Wilderness Medical Society; Fellow, American College of Emergency Physicians; Fellow, Academy of Wilderness Medicine

Medical Specialty: Emergency Medicine

Healthline Blog: Medicine for the Outdoors

Dr. Paul S. Auerbach is Professor of Surgery in the Division of Emergency Medicine at Stanford University School of Medicine. Dr. Auerbach is a founder and past president of the Wilderness Medical Society, editor of the definitive medical reference text Wilderness Medicine, 5th Edition, and author of Medicine for the Outdoors, which is the leading book on outdoor health for laypersons. He serves on the National Medical Committee for the National Ski Patrol System and is a recipient of the DAN America Award from the Divers Alert Network, Outstanding Contribution in Education Award from the American College of Emergency Physicians, a NOGI Award in 2006 from the Academy of Underwater Arts and Sciences, Diver of the Year for Science in 2008 from Beneath the Sea, and DAN/Rolex Diver of the Year in 2009. Dr Auerbach is the world's leading authority on wilderness medicine. He practices emergency medicine, teaches, performs research, and advises numerous agencies and organizations, including serving as an advisory board member to the AARP Fat 2 Fit Community Challenge. Dr. Auerbach has been hailed as a Hero of Emergency Medicine by the American College of Emergency Physicians.

Publications:
Field Guide to Wilderness Medicine
Medicine for the Outdoors
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U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Richard Garr

Address: 1858 South 4200 West
Taylor, UT
84401

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

I believe G.S.L. adds so many jobs in the Community with little to no impact enviromentally that the expansion should be approved. 49.1

I believe were it not for GSL the deer herd living on little mountain would not be thriving as it is today. I also believe GSL actually add's habitat for birds by bringing is fresh water for their process that otherwise would not be readily in the vicinity. 49.2 49.3

G.S.L. I believe has also been nothing but enviromentally responsible throughout all of their operations. 49.4

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Robert Neill **Address:** 2567 E Pringle Circle
OGDEN, UT 84403

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

The Causeway has already drastically changed the North Arm habitat by increasing salinity. This evaporation pond plan is big. It will whittle away what little avian habitat that is left in the North Arm. 50.1

looks like the Bear River proposal like wise will affect a significant number - "thousands" of existing avian bird population in the Remainder GSL. 50.2

This is a shame when we said.
There is no place else to ~~good~~ go

Robert Neill
6.9.09

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Robert Salisbury **Address:** 3061 N. 1050 W
Pleasant View, UT 84414

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I wish to express my support for this project 51.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Ron Costel **Address:** 1551 Mtn. Rd.
Logan, UT 84321

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

I feel the expansion of GSLM will provide continued good stewardship of Utah resources. Due to the remote areas impacted by the expansion and the condition of the area, as a public use area, very little change will be made. 52.1

The additional tax & royalty payments will continue to provide the state with a very good income source. Addition jobs for a skilled and unskilled workforce will be the primary benefit to us all. 52.2

This project ~~make~~ is a usable use of state lands. 52.3

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Sally Neill **Address:** 2561 E. Pringle Cir
Ogden UT 84403

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

Ecosystem of the GSL is monumentally important in the scheme of life. Disturbing it to the extent proposed cannot help but alter the system. Dikes and causeways already in place have caused changes in salination that alter avian populations as seen by the current ponds that plovers no longer inhabit. The excuse that not much bird activity is occurring in the N. arm and therefore the ponds won't do any damage to avian populations — doesn't hold water. 53.1

Studying GSL for a few years can't begin to tell the entire story of what damage these additional ponds will create. 53.2

Allowing GSL Minerals to develop more area of the GSL is akin to the ~~[illegible]~~ government selling public property for private exploitation. 53.3

~~That~~ At what price are we favoring economic gain over the preservation of an ecosystem that ~~should~~ ~~[illegible]~~ is paramount in importance.

Don't sell our souls!

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Sandy Strong **Address:** 2453 W 4800 S.
Roy Ut. 84067

Representing (optional): _____ **Self** **Other** (please specify) GSL

Comments or Concerns:

I understand the need and protection of the wildlife on the lake. I have lived on the lake all of my life and watched the natural cycles of the lake and wildlife. I have watched GSL for 37 yrs and found that they do everything possible to protect the wildlife around them. 54.1

I am for the expansion. I ~~agts~~ also feel that the hundreds of jobs that would be created if they are allowed to expand in this economy should be concidered. It would be a big boost for Utah. Please concider that in your desiion making. 54.2

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Sharla Roper **Address:** 2890 N. 3650 W.
Ogden, UT 84404

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

We need more jobs here. We need more fertilizer production. GSL needs to expand and I agree with their plans. GSL practices are environmentally sound, and the habitat is living proof of their good management. 55.1
Please allow this business to expand to meet demand for their product and the need for more jobs for local residents.

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Stephen Joyce **Address:** 444 e. 3000 N
North ogden UT. 84414

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

As an Employee of G.S.L. and also a Resident of the greater Ogden area, I'm a firm Supporter of this expansion, G.S.L is a Safe, environmentally Sound, whom with the growing needs of are world for a Sound Fertilizer, "Sop". Can offer Both a good job, a Sound tax base, and future Employment for myself and new hires 56.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Steve Goon **Address:** 727 N. Hope Circle
Layton, UT 84040

Representing (optional): _____ **Self** **Other** (please specify) _____

Comments or Concerns:

This proposed expansion does not appear to encroach on bird/wildlife habitat as I was told. It also does not seem likely to alter the chemical concentrations of certain molecules/elements in any negative fashion. 57.1

I am told & understand that no chemical compounds ~~that~~ will be introduced into the lake that isn't already in the lake, which seems ok to me. 57.2

I have no problem with this proposal. 57.3

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Tammy Martinson **Address:** PO BOX 158
Hooper, UT 84315

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

I am in support of the expansion. GSL has provided many needed jobs. The expansion could provide more jobs in the area. 58.1

I believe that the proposed expansion is in a remote area that will have little effect to the environment. 58.2

I believe that the freeways (example: "Legacy Highway") have more of an impact on the wildlife.

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: THEORE A. DUNN
Ann Alene Dunn

Address: 987 E. 5400 So
Ogden, ut- 84405

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

We see no problem with the increased ponds according to displays + the way it was explained to us by the Corp of Engineers. 59.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Tom S. Burton **Address:** 5031 Glasmann Way
Ogden UT 84403

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

This looks to be a great way to assure ample fertilizer for America in the future. I would hate to see the U.S. become dependent on foreign fertilizers because of poor long-term planning, as has happened with other comodities. 60.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Tom Fehr

Address: 5025 Adams Avenue, Suite 300
Ogden, Utah 84403

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

My greatest concern is the visual impact when the water in the ponds turns red. The Wasatch Range with a blue Great Salt Lake in the foreground is beautiful, but red ponds create the opposite effect - ~~creating~~ presenting more of the appearance of a Martian landscape. 61.1

I have often viewed these red ponds on commercial flights between the northwest and Salt Lake City and, consequently, believe these ponds will negatively impact tourism.

Additionally, I hope you will study the effects that the ponds will have on waterfowl, especially migratory waterfowl. Will the unusual red color of the ponds tend to deter ~~them~~ waterfowl from using their normal landing areas; and if they land on the ponds, would the increased concentration of chemicals adversely affect ~~either~~ the birds, ~~or~~ the families of hunters who eat the birds, or other wildlife (such as peregrine falcons or other raptors) that may eat the birds? 61.2

(continued on attached sheet)

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Tom Fehr

Address: 5025 Adams Avenue, Suite 300
Ogden, Utah 84403

Representing (optional): ✓ **Self** **Other** (please specify) _____

Comments or Concerns:

(continued from attached sheet)

Finally, since the materials available at this meeting indicate you will balance benefits and harms and since the Applicant sent a communication to me indicating they believe their chemical fertilizer is a benefit, please, if your regulations permit, consider the known negative impacts from the use of chemical fertilizers – especially the leaching of such fertilizers from irrigated land into the waters of the United States where the fertilizers produce an abnormally large amount of plant growth. 61.3

As an aside, I must say that I regret having to ask you to consider the preceding negative effects because Dr. Corey Milne is a dedicated professional with considerable integrity whom I know and like; but I must do what little I can to help protect the environment where I live.

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Vern child **Address:** 1060 W. PLEASANT VIEW DR.
PLEASANT VIEW UT 84414

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

I Feel If This Resource will support the Expansion + The company's Follow The corps Requirement They should Be Allowed To Expand. 62.1

One concern I Have is How Long can we Take The minerals out of The Lake Before its To Low. 62.2

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Vivien Cannon **Address:** 673 E. Rosewood Ln.
Layton, UT 84041

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

I support the GSL expansion because I think it is good for the future as well as for GSL 63.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *Comfort Suites Hotel*
2250 South 1200 West
Ogden, Utah

June 9, 2009

Comment Form

Name: Yaeko Bryner **Address:** 1373 30th St.
Ogden, UT 84403

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

The Great Salt Lake is a treasure that needs to be protected. The short term financial gains that will be realized by GSL minerals does not compare with the value the lake has to the natural community. It has been designated of hemispheric importance and I fear that we are ignoring that importance for short term financial gain. 64.1

Please take time to study this further.

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Ann O'Connell

Address: 352 East 1000 South
SLC 84102

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

I am opposed to any expansion of Great Salt Minerals. The company's footprint on the GSL is damaging to avian habitat and a threat to the lake's chemistry — especially the salt balance. Such an industry should never been allowed in the first place so surely should not be allowed to expand. 65.1

Ann O'Connell

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Christopher Hancock **Address:** 1191 W. 10875 So.
So. Jordan UT 84095

Representing (optional): UWA **Self** **Other** (please specify) Utah Airboat Asc.

Comments or Concerns:

I am concerned on a lot of the area being proposed, primarily with knowing what this does to the vegetation in the areas where the mineral are taken from being the effects of what it does for the migrating birds in the area being a primary resting area. Also with the area being diked in the Bear river bay area conserning water level control with the effect on the ~~[illegible]~~ large areas being diked and the amount of vegetation and wild life in this area. 66.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Chuck Harsin **Address:** 4620 So 500W
Ogden Ut 84405

Representing (optional): ✓ **Self** **Other** (please specify) Widow Maker Boats

Comments or Concerns:

The Dike in BR Bay would cause a channeling effect along the out side of the Dike causing the remainder of the Bay to the north East to Drain causing Many acres of Lost Habitat for both Shore birds, Water Fowl of many different Varieties. There are many different reasons. Please Do not let this go through. 67.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Corey Bethel

Address: 5528 S. 3100 W.
Roy Utah, 84067

Representing (optional): X **Self** **Other** (please specify) GSL

Comments or Concerns:

I live in this area for the mountains and environment. I like how GSL & the community has taken precautions in the expansion. I know the areas best interests will be considered in GSL expansion. 68.1

Ltr # 69

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Dustin Gleed **Address:** 1801 w North Star Dr SLC ut 84116

Representing (optional): _____ **Self** **Other** (please specify) UTAH Mud Motor Assc.

Comments or Concerns:

To Many Question's and not enought Answers: ~~The~~ ~~How the~~ ~~waters~~ where is the water going to go. ~~What~~ worryed about the wildlife. 69.1-3

Ltr # 70

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: JEFF BRINGHURST **Address:** 1470 PIMLICO PL.
SANDY UT 84092

Representing (optional): X **Self** **Other** (please specify) UTAH MUDMOTOR ASSC.

Comments or Concerns:

AS A WATERFOWL HUNTER AND OUTDOOR ENTHUSIAST I DO NOT THINK EXPANSION INTO THE BEAR RIVER BAY IS A GOOD IDEA. I OPPOSE ANY EXPANSION INTO THE BEAR RIVER BAY. BLOCKING WATERFLOW AND LOSS OF HABITAT CAN NOT BE UNDONE. ONCE THIS LIMITED RESOURCE IS GONE IT CAN NEVER BE BROUGHT BACK. GSL STATED THAT THEY CAN CONTINUE WITHOUT EXPANSION INTO THE BEAR RIVER BAY. 70.1

IN EXCHANGE FOR LAND LEASES ON THE WEST SIDE OF THE LAKE GSL SHOULD FORFEIT ALL CURRENT AND FUTURE LEASES ON THE EAST SIDE. EXPANSION ~~SHOULD~~ ON THE EAST SIDE SHOULD NOT HAPPEN. 70.2

THE SHOULD ALSO CONVERT ALL THEIR PUMPS TO SOLAR/ELECTRIC TO REDUCE CARBON EMMISIONS. 70.3

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Josh Noble **Address:** 1341 N 325 E
Layton, UT 84041

Representing (optional): X **Self** **Other** (please specify) Utah Mud Motor Ass.

Comments or Concerns:

We ~~[illegible]~~ felt it necessary to take into account the long term ramifications of dumping 5 million tons of alien dirt into the GSL. To further that thought, through study there is NO way to quantify the effects of said dike and how it will effect the over all quality & flow of Bear River Bay. We strongly suggest killing this idea or at the very least looking at other alternatives. 71.1

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: SCOTT DUIRE **Address:** 1920 WAIRD DR
SLC, UT 84108

Representing (optional): X **Self** **Other** (please specify) FoGSL

Comments or Concerns:

1. THE DEFINATIVE IMPACT THRESHOLDS ON MOST ISSUES SEEMS DIFFICULT TO DEFINE DUE TO NATURAL FLUCTUATIONS OVER BROAD RANGES AND MULTIPLE INFLUENCES. DATA IS LIMITED SO IS MODELING DIFFICULT. I WOULD THINK THIS SHOULD REQUIRE THE CORP TO ERROR ON THE CONSERVATIVE SIDE. (PLEASE) 72.1

2. MOST CONCERNING ASPECTS -
- % OF INCREASE (HUGE AMOUNT OF LAKE BED) 72.2
- CONCENTRATION OF IMPACTS DUE TO DISCHARGES OF FLUSHING 72.3
- FLOW CONSTRICTIONS AND DIVERSION METHODS 72.4
- COMPOUNDING IMPACTS OF USAGES (DEATH BY A THOUSAND CUTS) ~~BE~~ WITH CONSIDERATION OF OTHER EXISTING INDUSTRIES, PRESSURES, INFLUENCES OF MAN-MADE CHANGES. 72.5

* IMPACT ON BIRDS AND THEIR USAGE OF THE LAKE 72.6

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 11, 2009

Comment Form

Name: Tanner Tilby **Address:** 6079 Eagle Nest Dr.

Representing (optional): ✓ **Self** **Other** (please specify) Utah Mud Motor Assoc.

Comments or Concerns:

This is going to affect the waterfowl horribly. It will affect the birds that come in this state. There are divers and puddle that come threw and most are puddle but if you dont allow it to flow it will raise water levels. 73.1
This will make it a challenge for puddle ducks to get the food they need, this may cause some ducks to starve and reduce the land that the puddle ducks raise ducklings.
Also this is just a dumb idea!

Ltr # 74

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: Andy Taylor **Address:** 479 Cherry Dr.
Riverdale, UT, 84405

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

Worried about the Possible effects this would have on resident and migrating birds, the dikes Bringing Predators further out into the lake, and where all the birds will go if you take away all the acreage. Taking away Airboat access and cutting into huntable area. the great Salt lake is a valuable resource that we shouldn't give away, cause we can never get it back. I oppose this expansion. 74.1 74.2 74.3

Ltr # 75

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: Chris Hancock **Address:** 1191 W. 10875 So. So. Jordan UT 84095

Representing (optional): _____ **Self** **Other** (please specify) UWA
Utah Air Boat assc.
Utah mudmotor assc.

Comments or Concerns:

~~Big est~~ Biggest concern is with water levels in the Wilard Bay and Spur area, the loss area on lake and Habitat condancing the amount of birds, causing in spreading of Deises. Also the amount of Birds consuming food in the area around proposed. Consentration of hunters because of lost area also pushing birds out of the area. the amount of predites ~~being~~ being able 75.1
to access area from dikes, proposed area being over 75.2
origonal flow so loss of access also being ~~pig~~ so 75.3
close to wild life management areas is this 75.4
going to alter bird usegge. the Density of vegitation 75.5
Being calculated in water flow modeling. with on going
~~Pag~~ phrag problems with backing up with loss area 75.6
for water to go.

Ltr # 76

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: Chuck Marvin **Address:** 4620 So 500 W
Ogden Ut 84405

Representing (optional): ✓ **Self** **Other** (please specify) Widow makers Boats

Comments or Concerns:

Being an avid waterfowler that not only hunts the proposed portion of Bear River but many other areas of this bay and surrounding Public areas. I feel that if this area is Diked it will cause loss of habitat for loafing, feeding, Roosting and possibly nesting in good water conditions. One of my major concerns is the importance of this area as a major staging area for ducks, geese Tundra Swans, Endangered trumpeter Swans and dozens of other Species of Shore and Wading birds. Another concern is that Airboats are only allowed in a few areas in the State, Bear River Bay being one of the best. Airboaters have been hunting and Recreating in this area since there were Airboats. In the Mid 1950's the first Airboat was built on the Bird Refuge by the Feds and have been in use on this bay ever since. A very large Portion of this bay is extremely Shallow and any fluctuations in Water level could adversely affect the Biomass and intum

76.1

76.2

Over

fold over

BIO-WEST, Inc.
1063 West 1400 North
Logan, UT 84321

place postage here

Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

fold over

Affect Brine Shrimp, bird, and any other Species that Rely on Certain Water conditions to sustain life. I would like to make a point that with proper Water levels there is a very large bank of Sago Pondweed and Salacornia in the Proposed area upon in Migration time at Dusk you can see thousands of Ducks travel from both BRBR and Harold Crane WMA to Feed and Boost on. AS Waterfowlers we cant afford to lose any more Public Hunting areas as it is too Crowded as it is. I could go on for hours but in closing I do not want this project to go through And I Vote! 76.2

Thanks, Chuck

Ltr # 77

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: Cindy Lund

Address: 2443 High Mountain Dr
Sandy UT 84092

Representing (optional): ✓ **Self** **Other** (please specify)

Comments or Concerns:

First I am concerned about the water GSLM will take out of the lake. There is no plan to have them stop when the lake reaches a certain low level. They have said they will continue pumping regardless of lake level. 77.1

Second I question the need for expansion, especially at this grand scale. Will GSLM + the railroad have control over the lake, its levels, its salinity, its shape? 77.2

I am not against GSLM doing business, I am against them taking advantage of the system + sending out literature that only tells part of the story. It is interesting that their flyer was available at this meeting. "please see www.gslfuture.com" Is GSLM the future of the Great Salt Lake? 77.3

Ltr # 78

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: DAVID HANSCOM **Address:** 1451 MORAY CT
PARK CITY, UT 84060

Representing (optional): X **Self** **Other** (please specify)

Comments or Concerns:

THE BEAR RIVER BAY EXPANSION SHOULD NOT BE ALLOWED! IT WILL NEGATIVELY AFFECT MIGRATING BIRDS. THEIR PROPOSED EXPANSIONS IN THE NORTH ARM ARE ALREADY TOO MUCH. KEEP THEM AWAY FROM THE REFUGE, AND MINIMIZE IMPACT ON POPULATION CENTERS. 78.1

Ltr # 79

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: Emily Crockett **Address:** 292 Galena Park Blvd #723
Draper, UT 84020

Representing (optional): X **Self** **Other** (please specify) _____

Comments or Concerns:

The proposed expansion poses an unnecessary threat to the Great Salt Lake Ecosystem. Industrial interests should not ~~be~~ take precedence over other land uses. 79.1

This is public land - it should be enjoyed + conserved not destroyed by industrial groups. 79.2

Ltr # 80

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: HEATHER DOVE

Address: 2072 RAINBOW POINT DR.
SLC, UT 84124.

Representing (optional): ✓ **Self** **Other** (please specify) ✓ GREAT SALT LAKE AUDUBON.

Comments or Concerns:

I am very opposed to the proposed expansion of GSLM. The Great Salt Lake is a unique and precious resource for this state, and more importantly for the birds. I find it unacceptable to reduce the area near the Bear River Wildlife Refuge that these birds currently use and require. Further, 80.1

it is unacceptable to endanger the pelican population in the north arm by opening it up to predators and noxious noise. 80.2

The state makes money from tourism related to birding and the Great Salt Lake. Allowing this expansion project to go forward will reduce the state revenues. 80.3

Also, by going forward with projects that could reduce the water level of the GSL could have an adverse impact on snowfall at the ski resorts. As we all know skiing is a major industry in this state that brings in lots of money. 80.4

Finally the lake is already under assault by the allowance of increased selenium levels, and proposals by oil + gas exploration companies. Please decide to leave this precious resource alone! 80.5

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

RECEIVED JUL 7 2009

Public Meeting: West High School
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: ROBERT LAND

Address: 4618 S. WELLINGTON
HOLLADAY UT 84117

Representing (optional): Self

Other (please specify)

Comments or Concerns:

I AM TOTALLY OPPOSED TO THE BEAR RIVER EXPANSION BECAUSE OF THE IMPACT ON MIGRATORY BIRDS. WE KEEP CHIPPING AWAY AT THE EAST SIDE OF THE LAKE - LEGACY HIGHWAY, HOUSING DEVELOPMENT AND NOW ADDITIONAL EVAPORATION PONDS; SOON THERE WILL BE NOTHING LEFT, WE HAVE TO DRAW THE LINE. 81.1 81.2

AS FOR THE WESTERN EVAPORATION PONDS I AM LESS DECIDED ABOUT, BUT I HAVE SOME CONCERNS THAT GLSM SHOULD PROVIDE PROPOSALS TO RESOLVE AS FOLLOWS 81.3

1) GUNNISON ISLAND LAND BRIDGE. NEED TO ENSURE THIS DOES NOT FORM, MAYBE GLSM SHOULD NOT PUMP IF THE LAKE FALLS BELOW A CERTAIN LEVEL.

2) THE PLOVER NESTING HABITAT NEEDS PROTECTION 81.4

3) THE FRESH WATER PONDS ON THE WEST EDGE NEED PROTECTING AGAINST POLLUTION WITH SALT WATER. THERE IS WILDLIFE THAT DEPENDS ON THESE PONDS. 81.5

THERE SEEMS TO BE EFFICIENCY GAINS TO BE MADE BY IMPROVING 81.6

Ltr # 81 2/2

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: ROBERT LAND

Address: 4618 S. WELLINGTON
HOLLADAY UT 84117

Representing (optional): _____ Self **Other** (please specify) _____

Comments or Concerns:

THE BEHRENS TRENCH. I THINK THIS SHOULD BE DONE BEFORE BUILDING THE WESTERN PONDS, THEN SEE HOW MUCH THIS IMPROVES PRODUCTION. 81.6

A GOOD PROPORTION OF THE ROYALTIES FROM GLSM SHOULD BE SPENT ON ENVIRONMENTAL ISSUES AROUND THE SALT LAKE, NOT JUST DUMPED INTO THE GENERAL FUND. BASICALLY, NEED A CLEAR EXPLANATION ON HOW THE ROYALTIES AND TAX REVENUE WILL BE SPENT. 81.7

IN ADDITION TO THE ROYALTIES AND TAX GLSM PAY, THEY SHOULD MAKE A GENEROUS CONTRIBUTION TO HELP IMPROVE AND MANAGE THE WILD LIFE HABITAT REMAINING. 81.8

Ltr # 82

U.S. Army Corps of Engineers Public Meeting for the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake

Public Meeting: *West High School*
241 North 300 West
Salt Lake City, Utah

June 24, 2009

Comment Form

Name: Wade Hancock **Address:** 1191 w 10875 so
so Jordan ut 84095

Representing (optional): _____ **Self** **Other** (please specify) UWA

Comments or Concerns:

New channel access into Bay Area from Spur to Replace existing channel flow. 82.1

water level & vegatation level & Acreage. 82.2-3

Jason Gibson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

RECEIVED
JUN 10 2009
JG

6/8/09

Jeff Farr
56 S. Meadow Rd
Mantua, UT. 84324
435-723-7020

I am opposed to any additional expansion of GSL evaporation ponds in the area know as Willard Spur / Bear River Bay. This area is heavily used by millions of migratory birds each year. This area is a fresh water bay. I do not support any additional diking or expansions of evaporation ponds. These changes could cause water flow changes that could cause additional damage to the plants and wildlife using this area. Millions of cubic yards of fill would be required to build additional dikes. This would disrupt water flows and bird habitat. Again, millions of waterfowl and shore birds use this area. It is an important nesting, resting and feeding area for these birds. This is also a recreational area, which if lost, cannot be replaced. 83.1 83.2

Expansion could cause additional lake level loss. Changes could also impact the salinity of the water in this fresh water area. Once this area is lost, it cannot be replaced. Please oppose and do not give approval for any expansion in the Bear River Bay / Willard Spur area. 83.3

Thank you,

Jeff Farr

From: Becki Wright
To: Gipson, Jason A SPK;
Subject: GSLM Proposed Expansion (App # A78499 & H2O Right # 13-3896)
Date: Friday, July 03, 2009 6:22:07 PM

Jason,

Please do not approve the proposed GSLM expansion (application number A78499 - Water Right number 13-3896). It would be a terrible move for the long-term sustainability of the Lake and for the overall ecosystem. If approved, the expansion would have these negative effects: 84.1

- Depletion of Lake levels
  - Gunnison Island exposed to predators/humans;
  - Loss of wetlands on east side of the Lake; corresponding loss of waterfowl habitat
  - Loss of shorelines throughout the Lake
  - Exposure of mudflats; corresponding dust storms carrying toxic dust and fine particulate matter over populated areas
  - Possible destruction of ecosystem of North Arm
  - Increased proliferation of invasive species (phragmities) on east shoreline

84.2

- Construction of dikes/infrastructure to support expansion
  - Depletion of shorelines in western portion of North Arm
  - Destruction of wetlands & shorebird/waterfowl habitat in both North Arm and Bear River Bay
  - Increased access to predators to formally isolated bird populations
  - Increased noise, destruction of Lake habitat

84.3

- Recreation
  - Destruction of waterfowl habitat affecting duck hunters
  - Impediment to navigation throughout the Lake, but especially in Bear River Bay
  - Destruction of waterbird/shorebird habitat affecting bird watchers
  - Loss of scenic beauty, aesthetics; conversion of natural systems into industrial mining facilities

84.4

- Flushing of ponds into Bear River Bay
  - Huge increase in amount of excess salt flushed into Bear River Bay; currently 4.5 million tons, likely to exceed 20 million tons
  - Destruction of habitat due to increased salinity levels in Bear River Bay

84.5

o Concentration of toxic substances (mercury/selenium) in the flushed salts 84.5

Thank you for respecting both your legal and moral obligation to listen to and consider the comments of the public. I look forward to you addressing my concerns.

Best, Becki

Becki Wright
235 East 200 North
Bountiful, UT 84010

From: Carl Culp
To: Gipson, Jason A SPK;
Subject: Great Salt Lake Borders Encroachment
Date: Sunday, July 05, 2009 2:32:13 PM

Sir: Please, Please do not allow any more restrictive useage of our Lake and open ground in western Utah. We have lost a lot by the developments of Saratoga Springs and Eagle Mountain and their concomitant restrictions as will happen with the mineral ponds and plant. Our accessible, free outdoors is shrinking at an alarming rate. I drive west towards Wendover and see industrial plants all along the highway that mean restictions of use by their locations. I ask myself and my friends where can we go to hunt in the offseason that is safe and free of development. The prospects of this latest incursion by the minerals people as displayed by the map in this mornings paper is real scary. Again, please do not let it happen; they have enough ground already. Thank you for your time. Carl Culp 85.1

From: CR6391@aol.com
To: Gipson, Jason A SPK;
Subject: G.S.L.
Date: Tuesday, June 02, 2009 10:35:24 PM

Dear Sir

I SUPPORT THE EXSPANSION OF THE POND SYSTEM AT GREAT SALT LAKE MINERALS. THIS IS A CLOSE TO HOME ISSUE FOR ME AS MY FATHER WORK THERE AS PURCHASING AGENT FOR NEARLY 40 YRS. I MYSELF HAVE LITTLE INFO OF THE IMPACT OF THE ENVIROMENT BUT I DO KNOW TERE IS GREAT NEED FOR THE PRODUCT THEY PRODUCE. 86.1

THANK YOU
CHAD RUSSELL
801/721/8728

Shop Inspiron, Studio and XPS Laptops at Dell.com

From: Christopher Cokinos [mailto:chris.cokinos@usu.edu]
Sent: Tuesday, July 07, 2009 1:59 PM
To: Gipson, Jason A SPK
Subject: SPK-2007-00121 Great Salt Lake Minerals

Dear Sir:

How many dead pelicans does it take to fertilize a lawn? Or grow an apple?

This is not a stand-up comedian's joke. It's the essence of the debate over a proposed expansion of Great Salt Lake Mineral's potassium sulfate mining-this, from a lake that is as important as it is ancient.

GSL's operations can be characterized as relatively benign in that the mineral-which is organic-is harvested by simply drying the water and separating the potassium out. Demand for the fertilizer has increased, so GSL last year asked Utah's Division of Wildlife Resources for approval of a new 52,200 acre expansion. Any expansion will mean disruptive construction of ponds, ditches and dikes. To mitigate the impacts, however, GSL offered a trade of what it said was good habitat, promising that those 30,000 acres would be let go from GSL control. 87.1

But those acres would not have automatic protection from future development.

And now GSL wants more than 100,000 acres to evaporate out potassium sulfate.

If allowed to move forward, the operation will threaten the wild birds of Gunnison Island.

So forgive me if reassurances from GSL officials and others that the proposed expansion won't hurt the environment don't reassure. This is a company that has said one thing and done another. 87.2

And pardon me if the touted economic benefits don't seem that great. 50 new jobs and about $5 million in revenues to the state? Sounds good-on paper. But what GSL has put on paper is already hard to trust. One wonders if a state rich in sustainable resources such as sunshine and wind might create more jobs and more revenue in less destructive ways. 87.3

Would 100,000 new acres devoted to potassium extraction be that destructive?

According to Keith Evans and Wayne Martinson in their book "Utah's Featured Birds and Viewing Sites," "One of the largest nesting colonies of American White Pelican...in the nation is at Gunnison Island..." Furthermore, what we see today is a legacy of the past: "It is believed American White Pelicans were common in the Great Basin area during the era of Lake Lahontan and Lake Bonneville. Remains of several ancient nesting colonies have been observed on the old shorelines of mountains that would have been islands during this time frame." 87.4

It's likely that the GSL expansion would destroy the pelican colony on Gunnison Island because this species is exquisitely sensitive. "To be successful," Evans and Martinson write, "American White Pelicans need isolated islands to nest without predators and human disturbance." The 25,000 pelicans that feed in Gunnison Bay and the thousands of young they fledge off Gunnison Island face almost certain diminishment if not outright devastation if GSL is allowed to operate close to the island. In low water years, people and predators will be able to walk to the island.

And we will have lost another breeding site for this magnificent bird, a bird that has seen its western nesting colonies contract by more than 50% to fewer than ten sites today.

Pelicans are ponderously graceful descendants of dinosaurs. Not long ago I was on a ridge in Logan Canyon with a friend who called out, "Look, look!" There, like snowflakes with wings, were white pelicans banking high above a north-facing slope of doug fir; this is a form of inheritance beyond commodity.

We can still make a practical argument for protecting the pelicans of Gunnison Island. Think of them and it as rivets on an airplane. The metaphor isn't mine, but I love its point. How many of us would fly on an airline that didn't care if its planes lost rivets on a regular basis? Lose enough rivets, and something important goes, like, say, the tail. 87.4

The time is now for policymakers-especially those at the Army Corps of Engineers-to heed the advice of their physicians: First, do no harm

Christopher Cokinos
Associate Professor of English
and Adjunct Associate Professor
of Environment and Society
Editor, Isotope: A Journal of Literary Nature and Science Writing

3200 Old Main Hill
Utah State University
Logan, Utah 84321
435-797-3351
chris.cokinos@usu.edu

From: Claire CONILLEAU [mailto:claire.conilleau@univ-paris12.fr]
Sent: Wednesday, July 08, 2009 3:28 PM
To: Gipson, Jason A SPK
Subject: Public Notice SPK¬2007¬00121 / Great Salt Lake Minerals Corp.

Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010
RE: Public Notice SPK¬2007¬00121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.
This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 88.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to
12 inches. 88.2
This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 88.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape. 88.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Claire Conilleau

English Instructor
Universite Paris 12 - Val de Marne
61, avenue du Général de Gaulle
94010 Créteil Cedex
France

From: Harris, Corey Russell [mailto:crharris@paychex.com]
Sent: Thursday, June 11, 2009 2:10 PM
To: Gipson, Jason A SPK
Subject: GSL Expansion Project

Jason,

Please accept my comment about emphatically opposing the GSL expansion project. Given the numerous reasons that have been mentioned we must protect what little GSL shoreline and mudflat areas that we have left for shorebirds, waterfowl and other animals and plant life that use the GSL ecosystem. 89.1

By no means does the enhanced production capabilities offset the destruction that would come from this expansion.

I will be at the public comment meeting at West High this evening.

Best Regards,

Corey Harris

Major Market Services

Paychex, Inc.

(: Direct 801.234.9956|7:Fax 877.828.6719

10757 River Front Parkway Ste 200 | South Jordan UT 84067

*:Email crharris@paychex.com <mailto:crharris@paychex.com>

From: Harris, Corey Russell [mailto:crharris@paychex.com]
Sent: Tuesday, July 07, 2009 9:37 AM
To: Gipson, Jason A SPK
Subject: RE: GSL Expansion Project

Jason,

After going to the meetings at the West High School. I learned more about the project and changed some of my views.

The area that the GLS wants to use in the Willard Spur would really impact us waterfowlers, airboats, and bird watchers greatly. While the proposed areas way out West, seems to be a much better alternative.

90.1

I oppose the expansion, but if it had to be...keep the willard spur for the birds and let them use the western lands that aren't being used by waterfowl or people.

Ch

From: Darin Noorda
To: Gipson, Jason A SPK;
Subject: GSL Mineral
Date: Tuesday, June 16, 2009 5:55:17 PM

Dear Sir,

I am writing this email to let you know of my dissatisfaction on the expansion of GSL mineral into the Bear River Bay. I just want to kindly remind you of the habitat and migratory staging area that will be lost with this expansion. Such a sad sight to see the loss of irreplaceable wetlands if this is approved. the shear number of migratory birds that stage along the Bear River Bay is breath taking. Please consider our vital and important role to migratory birds and habitat. i wish i could convey this in person but work prevents me from attending the public meetings. 91.1

thank you,

Darin Noorda
Delta Waterfowl Great Basin Chapter Chairman
435-452-1388

From: david brown
To: Gipson, Jason A SPK;
Subject: Great Sale Lake Minerals EIS
Date: Sunday, July 05, 2009 8:31:53 AM

Dear Sir,

As this EIS gets underway, I encourage the USACE to look at alternatives which meet its purpose and need rather than exclusively focusing on the proponent's	92.1
purpose and need for the project. I would also like to see objective analyses about the company's assertions regarding what they consider to be economically	92.2
feasible. The sheer scale of their existing operations is significant to the total percentage of shoreline habitat and the expansion of their facilities would	92.3
significantly decrease the amount of shoreline habitat that remains. I am also concerned that the reclamation requirements for impacts to playas and other jurisdictional waters of the US (e.g. wetlands) will be based upon unproven techniques and cannot reasonable be expected to replace the functioning	92.4
processes which the expanded operations will impact. The Great Salt Lake has a regional significance that cannot be replaced and should not be sacrificed for financial benefit alone.	92.5

Thank you,
David Brown
219 8th Avenue
SLC, UT 84103

From: David Hoza
To: Gipson, Jason A SPK;
Subject: Great Salt Lake Minerals/ notice SPK200700121
Date: Sunday, July 05, 2009 5:22:17 PM

Mr. Gipson:

This comment is concerning Great Salt Minerals request for 91,000 additional acres for fertilizer production at their facility on the north end of the Great Salt Lake.

While multiple-use and for-profit use of public and state owned lands is considered the policy of choice in Utah, I ask that you consider the fact that the Great Salt Lake is not only a local treasure, but a national treasure besides.

My greatest concern for this proposal, which I strongly urge you to deny, is that it can only negatively impact a fragile ecosystem and international wildlife corridor with increased industrial development, increased concentrations of salts and toxic minerals, and decreased acreage truly available for sustainable 'multiple use'. 93.1

While economic interests have long been prioritized over the health of the whole picture in Utah, the time has come to put economic interests in a sustainable relationship with ecosystem health and the rights and needs of other stakeholders. Denying GSLM's proposal will keep private interests from deciding the fate of fragile ecosystems such as the Great Salt Lake's, and contribute to sound environmental consideration for a region of great importance to millions of migratory birds.

Thank you for your consideration.

David M. Hoza
P.O. Box 581452
Salt Lake City, UT 84158

From: turnds@xmission.com
To: Gipson, Jason A SPK;
cc: coda@utah.gov; bferry@utah.gov; jgreiner@utahsenate.org;
Subject: GSL Mineral Expansion-No
Date: Thursday, July 02, 2009 1:43:32 PM

It is clear from reports from the EPA opinion and local studies that the inpact on taking more water from the Great Salt Lake has the potential to destroy the chemistry which keeps it alive for the birds, shrimp,etc, not to mention the bird watchers and hunters, the tourist and the related businesses which need a healthy lake remain viable. Since Kennecott wants to triple their quoto of selinium (they now dump 24% of the known amount which is measured in tons in the south arm) and the railroad cause way has blocked much of the flow from the north arm drastically changing the chemistry of the lake and since GSL mineral wants to further compromise both the North Arm and the Bear River Arm with a trench and additional salt ponds, all of these factors TOGETHER need to be taken on in a BIG picture, scientific master plan, NOT in pieces. 94.1

Thank you! If you have questions for me, my cel is 801-549-8919.
I would appreciate a quick, " I got it" from you.

David Turner
828 East 5750 South
Ogden, Utah 84405

From: Delphine Cingal
To: Gipson, Jason A SPK;
Subject: <aucun objet>
Date: Wednesday, July 08, 2009 12:08:17 PM

Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010
RE: Public Notice SPK 2007 00121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals[1] application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah. This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all.	95.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates	95.2
that wonderful magenta colored water. If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes.	95.3
This would also rob a major work of art from its serendipitous appearance	95.4

and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. 95.4
The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson¹s project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape.

I strenuously object to the proposed expansion project which will disrupt the area¹s isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson¹s internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

--
Delphine Cingal
22 avenue Henri Geoffroy
77240 Cesson
France

Ltr # 96

DELTA WATERFOWL FOUNDATION

The future of waterfowl and waterfowl hunting

July 3, 2009

Mr. Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Dear Mr. Gipson,

I am writing today to provide Delta Waterfowl's perspective on the current proposal before the Corps to allow Great Salt Lake Minerals Corporation to expand its current operations. Delta Waterfowl is a waterfowl conservation organization with a sizeable constituency in the Salt Lake City area and across North America, whom have an interest in the issue.

The Great Salt Lake and its associated marshes and wetland habitats are arguably the most significant wetland ecosystem in the whole of the intermountain west. Salt Lake and its marshes are incredibly important staging and wintering areas for a variety of duck species (pintail, lesser scaup, redheads, green-wing teal and canvasbacks) and are also a key breeding habitat for many duck species. In addition to the significant waterfowl usage of the lake, the area is a crucial area for shorebirds, marsh birds and other bird groups who use the wetlands and associated uplands during a portion of their annual cycle.

In review of the proposal, it appears as if Great Salt Lake Mineral is proposing to expand the footprint of their operations by 91,000 acres (over 142 square miles) and acquire water rights on an additional 350,000 acre feet of water, both these steps would cause significant harm to the ecosystem. First, the expansion of their operations would likely cause irreparable harm to wetlands and associated habitats, and negatively impact some of the most productive habitats within the Salt Lake wetland complex. This proposal represents a significant industrial intrusion into key wetland areas of which one could expect serious damage to the wetland habitats with resultant impacts on waterfowl, other birds and local wildlife populations. 96.1

In addition, as articulated in an application to the Utah Division of Water Rights, the demands for surface water under the development proposal may well reduce surface water to pool levels in the lake below lowest recorded levels. It is hard to imagine the implications of this water consumption, not only on the proposed site, but on the whole of the Salt Lake wetland complex, if this amount of dewatering was to be allowed. 96.2

U.S. OFFICE
P.O. Box 3128 • Bismarck, ND 58502 • Office 701 222-8857 • Fax 701 224-1924 • Toll Free 1-888-987-3695 • E-mail: usa@deltawaterfowl.org

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Unit 22 – 62 Scurfield Blvd. • Winnipeg, MB R3Y 1M5
Office 204 956-7766 • Fax 204 956-7755 • Toll Free 1-877-667-5656 • E-mail: canada@deltawaterfowl.org

www.deltawaterfowl.org

Finally, while the conservation and environmental concerns are paramount to prudent consideration of this proposal, it should be noted that waterfowlers, birders, boaters and a host other outdoor recreational pursuits would be negatively affected if the proposal is approved. Recently, Governor Jon M. Huntsman signed legislation to ensure that active management and waterfowling traditions can continue on wetland habitats well into the future. This action by the Governor and Utah Legislature is a striking example of the import of these landscapes for habitat and recreation. The actions as proposed by Great Salt Lake Minerals could undue all of those rich values. 96.3

As such, Delta Waterfowl firmly opposes the proposal by the Great Salt Lake Minerals Corporation to expand its operations at the proposed location. While we are vividly aware of the current and future burgeoning demand for resources, we also recognize pursuing these resources in areas of extraordinary value to waterfowl, other wildlife, waterfowlers and the public, simply comes at too high a cost. The rich resources of the Great Salt Lake must be maintained and the Corps should be central in ensuring those resources remain intact. 96.4

Thank you for the opportunity to submit this comment.

Sincerely,

John L. Devney
Senior Vice President

Dia:

Ltr # 97

July 7, 2009

Jason Gipson
Chief, Nevada-Utah Regulatory Branch
US Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Dear Mr. Gibson,

RE: Public Notice SPK200700121

On behalf of the board and staff of Dia Art Foundation, I am writing to express my sincere apprehension about Great Salt Lake Minerals's (GSLM) application to expand their evaporation ponds in Great Salt Lake.

Of particular alarm to Dia is the proposed development of 83,000 acres of ponds in the Lake's North Arm because of the proximity to Robert Smithson's internationally renowned public sculpture *Spiral Jetty*, constructed in 1970 at Rozel Point in Box Elder County. Dia acquired *Spiral Jetty* as a gift from the artist's Estate in 1999, and today oversees and advocates for the long-term preservation of the artwork within its surrounding environment.

Spiral Jetty is an iconic example of American "Land Art" that is widely considered a cultural masterpiece of the late twentieth-century. Key to its conception and its acclaim is the total integration of sculpture and site: the work itself comprises basalt rocks and earth gathered locally, which Smithson formed into a massive 1500-foot coil that unfurls into the Lake. Additionally, the specific geology and topology of the setting, particularly its remoteness, the pinkish tint of the water, and the crystalline structure of the salt, were fundamental to Smithson's formulation of the work. 97.1

Equally important to Smithson was the notion that *Spiral Jetty's* character would vary with the change in water level and weather. As photographs of the artwork reveal, the experience of the sculpture constantly evolves, and no two visits are ever the same.

For this reason, Dia's primary concern to GSLM's proposal is the depletion of lake levels. Loss of shoreline, exposure of mudflats, and corresponding dust storms could cause significant negative impact to the *Spiral Jetty* and its surrounding natural environment. Not only would a permanent "draught" environment be potentially problematic to the original conception of the artwork, but the possibility of actual degradation to the

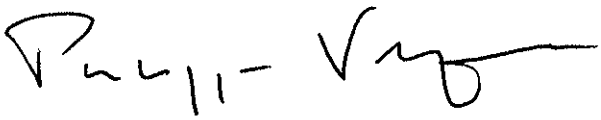
Dia Art Foundation
535 West 22nd Street New York New York 10011
212 989 5566 Fax 212 989 4055 www.diaart.org

sculpture from the buildup of natural materials, and potential increase of off-road vehicles at the site, could permanently destroy this internationally significant artwork. Of additional concern to Dia are the destruction of waterfowl and shorebird habitats; the deterioration of wetlands preserves; and the overall potential negative ecological impacts of GSLM's proposal to the unique and fragile Great Salt Lake ecosystem.

Each year thousands of visitors are drawn from state, national, and international locations to see *Spiral Jetty* and experience the austere beauty of rural Utah. As custodians of *Spiral Jetty*, Dia strives to preserve the unique experience of journeying to this remote site, where culture and nature conjoin in a manner rarely seen in the Western world. 97.1

Dia strenuously urges the State of Utah and the Army Corps of Engineers to consider the historic and cultural significance of *Spiral Jetty* when considering the threats GSLM's expansion plans may pose to this extraordinary aesthetic encounter. Should you have any questions regarding Dia's position, please feel free to contact directly at 212.293.5505 or pvergne@diaart.org, and thank you for consideration of our request.

Sincerely,



Philippe Vergne
Director

From: Dominique & Marie-Evelyne Busson Lemonnier
To: Gipson, Jason A SPK;
Subject: La défense du patrimoine
Date: Saturday, July 11, 2009 5:46:54 AM

Jason Gipson

Nevada-Utah Regulatory Branch

533 W. 2600 South

Suite 150

Bountiful, UT 84010

RE: Public Notice SPK-2007-00121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.

This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 98.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 98.2 98.3

This would also rob a major work of art from its serendipitous appearance and disappearance 98.4

contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape.	98.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Dominique Busson, Président de l'Association "Eole en Folie" au Mesnil 61570 Boucé, Normandie, France
Directeur Administratif

From: Erik Desmazières [mailto:erik.d@free.fr]
Sent: Wednesday, July 08, 2009 4:57 PM
To: Gipson, Jason A SPK
Subject: http://www.earthworks.org/spiraljetty/GSLMinerals_Letter.htm

Jason Gipson

Nevada-Utah Regulatory Branch

533 W. 2600 South

Suite 150

Bountiful, UT 84010

RE: Public Notice SPK200700121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.

This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 99.1

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This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and 99.4

cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape. 99.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Erik Desmazières

artist-printmaker

member of the Institut de France (Académie des Beaux-Arts)

7, rue Livingstone

75018 Paris - France

From: Greg White [mailto:GregW@brahmagroupinc.com]
Sent: Tuesday, July 07, 2009 3:49 PM
To: Gipson, Jason A SPK
Cc: Shanna Burnside
Subject: Public Notice SPK-2007-00121

Jason,

I wanted to take a moment to voice some concerns that I haven't seen addressed in some of the other letters that have been circulated concerning the Great Salt Lake Minerals recent proposal for a 91,000 acre expansion primarily within the confines of the Great Salt Lake.

I am an individual who believes strongly in the development of all natural resources. However, I am strongly opposed to GSL's expansion proposal as it has been presented. I believe that to allow such a proposal to proceed, would be an abandonment and disregard of absolutely every value that one could possibly learn in a lifetime! This proposal would have a devastating effect on the entire ecosystem of the lake. They would be hording up a tremendous amount of water (353,000 additional acre feet of water rights) for this proposed expansion. This will have a very devastating effect on residential, industrial and agricultural users for the future. 100.1

The bottom line for me and my associates here, would be that this proposed expansion for GSL as it has been presented, is much too risky for our future generations. We must have data that truly backs up and proves beyond any reasonable doubt, that they will not harm a most valuable resource that has been entrusted to us from our forefathers. We have technology available to us, that those who have passed on, did not have. Therefore, we have solemn responsibility to ensure that these types of ecosystems are not harmed in any way.

Sincerely,

Gregory L. White

Brahma Group, Inc.

Project Manager

1132 South 500 West

Salt Lake City, UT 84101

(801) 521-5200 - Phone

(801) 359-4973 - Fax

From: heatherclare@xmission.com [mailto:heatherclare@xmission.com]
Sent: Tuesday, July 07, 2009 11:25 AM
To: Gipson, Jason A SPK
Subject: Great Salt Lake Minerals Corporation Solar Evaporation PondsExpansion Project (NOI: SPK-2007-00121)

Dear Sir:

I urge you to consider the vast negative environmental impacts of the proposed Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion project. The proposed expansion poses a tremendous threat to the Great Salt Lake ecosystem. It will result in large water withdrawals, decline in lake levels, drastic alteration of salinity regimes, and construction of dikes and infrastructure. If the Great Salt Lake Minerals Corporation is granted its expansion, crucial wetland habitats will be lost, bird nesting grounds will be endangered, and recreational opportunities will diminish. A decline in lake level will also create a public health threat as it exposes a larger area of lake bed and increases the potential for dangerous dust storms carrying toxic fine particulate matter. 101.1

The Great Salt Lake is rich in environmental, economic, and social value. The proposed expansion of Great Salt Lake Minerals would undermine this value and irreparably damage our treasured lake. I urge you to protect the Great Salt Lake for future generations and reject the proposed evaporation pond expansion.

Sincerely,
Heather Moench
Salt Lake City, UT

From: Helene Thiercy
To: Gipson, Jason A SPK;
Subject: Public Notice SPK 200700121 / Great Salt Lake Minerals Corp.
Date: Wednesday, July 08, 2009 11:23:31 AM

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.
This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on **changing the ecology of the lake as we know it**. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 102.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 102.2 102.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic *Spiral Jetty* (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the *Spiral Jetty* in this unique landscape. 102.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously **consider the detrimental effects that this project will have on wildlife**, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly

constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Helene Thiercy
Lecturer in American Studies,
University of Paris – Denis Diderot
10 rue Charles V
75004 Paris, France

_____ Information from ESET NOD32 Antivirus, version of virus signature database 4224 (20090708) _____

The message was checked by ESET NOD32 Antivirus.

http://www.eset.com

From: Hikmet Loe [mailto:reddesert23@gmail.com]
Sent: Tuesday, July 07, 2009 6:03 PM
To: Gipson, Jason A SPK
Subject: Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion Project (NOI: SPK-2007-00121)

Dear Jason Gipson,

I write to you today, asking that you reject Great Salt Lake Minerals Corporation's application for 353,000 acre-feet of water (NOI: SPK-2007-00121).

The ecosystem of Great Salt Lake is one to be preserved and promoted. The water withdrawal proposed in the application poses a tremendous threat to the Lake's ecosystem. It would drastically lower water levels and alter salinity regimes. As a result, crucial wetland habitats will be lost, bird nesting grounds will be endangered, and recreational opportunities will diminish. A decline in lake level also creates a public health threat as it exposes a larger area of lake bed and increases the potential for dangerous dust storms. 103.1

As you may know, the north arm of Great Salt Lake is home to the iconic earthwork, the Spiral Jetty. Since 1970, this internationally acclaimed earthwork has existed withing the Lake's ecosystem as the work's artist, Robert Smithson, intended: the rise and fall of the lake's waters withing this meandering zone reacts with the earthwork's rocks to present a dynamic experience. As the lake's levels rise and fall, the earthwork is there to reflect back to what an amazing body of water Great Salt Lake truly is. Along with the lake's levels, Smithson was interested in its salinity and the myriad of microorganisms and brine shrimp that exist within its waters. With a dearth of water surrounding the Jetty on a permanent basis, the Jetty would become eroded and diminished in size. Thousands of local and international visitors drive to Rozel Point each year to view the Spiral Jetty - their experiences in viewing the work would be vastly reduced on an aesthetic level and eventually lead to the Spiral Jetty to be experienced by photographs in books, rather than in person. That would be a major loss to both the art world and to the citizens of Utah, who are so very proud to have this earthwork within our own backyard. 103.2

Robert Smithson is certainly not the only artist who has drawn attention to Great Salt Lake - there are many photographers today who record the lake to amazing ends. In the past, Alfred Lambourne homesteaded on Gunnison Island, he was so enamored of the lake. Writers of stature such as Wallace Stegner have been drawn by the lake's special, and startling, qualities. To have the lake means to sustain its current water levels. 103.3

Great Salt Lake is rich in environmental, economic, and social value. The proposed expansion of Great Salt Lake Minerals would undermine this value and irreparably damage our treasured lake. I urge you to protect Great Salt Lake for future generations and reject the water rights application of Great Salt Lake Minerals Corporation. By so rejecting this application, people, creatures, and art will continue to co-exist within one of the most unique and beautiful bodies of water on our planet. 103.4

Most sincerely,
Ms. Hikmet Loe
Art Historian
author of the forthcoming book, Rotating Through Time and Place: The Spiral Jetty and Rozel Point (Utah State University Press, 2010)

From: jnplgabilliet@free.fr
To: Gipson, Jason A SPK;
Subject: Great Salt Lake Minerals" project
Date: Wednesday, July 08, 2009 11:34:11 AM

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand
its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.

This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as
we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 104.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of
150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. If production 104.2

increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds
and dikes. 104.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and 104.4

cherished American sculptures of the late twentieth century and perhaps the most
iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape. 104.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Dr. Jean-Paul Gabilliet
Professor of American Studies
Université Michel de Montaigne - Bordeaux 3
France

From: Joan Gregory
To: Gipson, Jason A SPK;
Subject: Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion Project (NOI: SPK-2007-00121)
Date: Monday, July 06, 2009 9:48:25 PM

Dear Jason,

I urge you to consider the vast negative environmental impacts of the proposed Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion project.

The proposed expansion poses a tremendous threat to the Great Salt Lake ecosystem. It will result in large water withdrawals, decline in lake levels, drastic alteration of salinity regimes, and construction of dikes and infrastructure. If the Great Salt Lake Minerals Corporation is granted its expansion, crucial wetland habitats could be lost, bird nesting grounds would be endangered, and recreational opportunities are likely to diminish. A decline in lake level will also create a public health threat as it exposes a 105.1

larger area of lake bed and increases the potential for dangerous dust storms carrying toxic dust and fine particulate matter.

The Great Salt Lake is rich in environmental, economic, and social value. The proposed expansion of Great Salt Lake Minerals would undermine this value and irreparably damage our treasured lake. I urge you to protect the Great Salt Lake and its ecosystem and reject the proposed evaporation pond expansion. 105.1

Joan

Joan M. Gregory
916 S Nerual Circle
Salt Lake City, UT 84108-1343
801-582-7783
jmg@csolutions.net

P Please consider the environment before printing this e-mail. Thank you.

"The character of a society is the cumulative result of the countless small actions, day in and day out, of millions of people." -- Duane Elgin

From: Jock Glidden
To: Gipson, Jason A SPK;
Subject: Great Salt Mineral Corp. Proposal Policy #: SPL-200700121
Date: Thursday, July 09, 2009 5:28:38 PM

Deat U.S. Army Corps of Engineers: July 9, 2009

As a resident of the Wasatch Front for forty years in Utah, I would like to oppose the proposal of GSMC to expand their evaporation ponds in the north western reaches of Great Salt Lake for the following reasons:

1. Construction of the ultimately proposed 100,000 new acres of the lake will emperil the sensitive nesting habits of large birds who depend upon this unique lake for their birth cycle. 106.1

2. To grant their request will set a dangerous precedent for yet more mining requests of Great Salt Lake by the company in question and other companies. 106.2

3. I see no justification to sacrifice and imperil a unique, natural resource that all Utahns, indeed U S citizens, own to the profits of a few. 106.3

4. The benefits of a few more tons of potassium sulfate to the world commercial market do not outweigh the benefits of a balanced ecosystem and the enjoyment humans get from seeing flocks of the American white pelican flying. 106.4

5. There is no way to know beforhand whether the 1000,000 acre proposal will be ecologically benign or not. To allow the proposal and then wait and see may very well seal the fate of this avian life and then it will be too late. 106.5

Please take my objections seriously and deny the request.

Sincerely,

Jocelyn Glidden, 1777 Binford, Ogden, UT 84401

From: Laurence Belingard
To: Gipson, Jason A SPK;
Subject: Public Notice SPK-2007-00121 / Great Salt Lake Minerals Corp.
Date: Wednesday, July 08, 2009 9:54:57 AM

Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010

RE: Public Notice SPK-2007-00121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.

This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 107.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota 107.2

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complex of evaporation ponds and dikes. 107.3

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I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Laurence Belingard
Assistant professor, University of Avignon
30210 FOURNES, FRANCE

From: lwbingham@comcast.net
To: Gipson, Jason A SPK;
Subject: SPK-2007-00121
Date: Friday, July 10, 2009 9:54:08 PM

Jason,

Please carefully consider the impacts to water, air and habitat loss that expansion of the Great Salt Lake Minerals drying beds could create. Allowing further encroachment on Gunnison Island or on the lake itself seems to be a disaster in the making.	108.1
I would also like the impact of this diking system on lake level investigated.	108.2
How will this impact the lake in cases where the lake rises, as it did in 1983? I can imagine this sets up a situation where Great Salt Lake Minerals will seek damage for their beds that would be flooded to no-ones benefit.	108.3
I propose that use of existing drying beds with pumps would be better for the overall good of both wetlands, migratory birds and surrounding property owners. Restriction to existing beds would not further reduce the surface area of the unimpounded lake and would also not cause important rookeries on remote islands to be encroached upon and destroyed.	108.4

Best regards,

Lyle W. Bingham
Smithfield, Utah

Mackay Marine Brine Shrimp Company, Inc.

5058 South Commerce Drive • Salt Lake City, Utah 84107 • (801) 261-1789

July 9, 2009

U. S. Army Corps of Engineers
C/O Jason Gipson
Nevada – Utah Regulatory Branch
533 West 2600 South, Suite 150
Bountiful, UT 84010

RE: **PUBLIC COMMENTS ON GREAT SALT LAKE MINERALS EXPANSION ON THE GREAT SALT LAKE**

I wish to go on record as opposing any expansion of Great Salt Lake Minerals operations on the Great Salt Lake at this time. My opposition is based upon the fact that we do not fully know or understand what the long-term effects of the expansion would do to the lake. 109.1

The Great Salt Lake is like a World Heritage Sight. It supports a unique ecosystem thriving with life, from microscopic brine shrimp to hundreds of species of birds and waterfowl. It affects the weather and brings us the "lake-effect" world-famous snow.

I have worked in the brine shrimping industry since 1987. Any small change in the salinity of the lake could have disastrous effects on brine shrimp populations. The brine shrimp industry is worth millions of dollars to the State of Utah. It employs hundreds of people at good wages. Because the quality of Great Salt Lake brine shrimp (artemia franciscana) is superior to any other brine shrimp in the world, it is a highly sought commodity in the world-wide aquaculture industry. One of its key uses is in the production of edible shrimp, such as that found in local markets. Changes in the Great Salt Lake ecosystem can have a major effect on the production of brine shrimp, which will further affect the availability of edible shrimp and prawns. 109.2

All of the Great Salt Lake marina levels are currently at an all-time low. Global warning is real! Drought is predicted in the west. Any additional drop in lake levels would make the two main marinas un-useable without major dredging! 109.3

I adamantly oppose the expansion of Great Salt Lake Minerals. The State of Utah would be negligent to grant any new leases supporting such expansion.

Yours truly,

David J. Mackay, President
Mackay Marine Brine Shrimp Company, Inc.

From: Peggy Matlin
To: Gipson, Jason A SPK;
Subject: Proposed expansion of leases
Date: Monday, July 06, 2009 12:22:49 PM

Hello, Jason. My husband and I are sailors on Great Salt Lake. We are opposed to expansion of leases for Great Salt Lake Mineral company evaporation ponds. We support maintaining and preserving that which remains of Great Salt Lake in its natural state. 110.1

Thank you for your consideration of our position.

Most Sincerely,

Margaret Matlin
1224 E. South Temple Street
Salt Lake City, UT 84102

Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010
RE: Public Notice SPK200700121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.
This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 111.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 111.2 111.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic *Spiral Jetty* (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the *Spiral Jetty* in this unique landscape. 111.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment.
Thank you for your attention to this important matter.

Sincerely,

Marie DENIS,

Artiste-plasticienne
145 bis Avenue de Choisy
75013 PARIS FRANCE
http://www.labomedia.net/marissima/

From: Mark Lamon [mailto:mleekel@hotmail.com]
Sent: Thursday, June 18, 2009 2:47 PM
To: Gipson, Jason A SPK
Cc: mleekel@hotmail.com
Subject: Environmmental Impact Statement for Great Salt Lake

To: US Army Corps of Engineers 6/17/09
Att: Mr. Jason Gipson
Re: Environmental Impact Statement for Revised Great Salt Lake Minerals Cpoporation solar Evaporation Ponds
Expansion Project

Dear Mr. Gipson,

I read that you are working to draft an Environmental Impact Statement for the Revised Great Salt Lake Minerals Corporation's Solar Evaporation Pond Expansion Project Within the Great Salt Lake, Box Elder County UT. I want to make you aware that there is a multi-million dollar brine shrimp eggs (Artemia franciscana cysts) harvesting industry that would be heavily impacted by the proposed expansion of salt ponds into the South Arm of the Great Salt Lake. Brine shrimp eggs are harvested on the waters and current shores of the South Arm of the Great Salt Lake. This project sounds like it would impact the shore harvesting that is currently being done and would take more water from the Great Salt Lake that is needed by the brine shirmp industry for the growth of brine shrimp adults and consequently their eggs. 112.1
I think this industry must be taken into regard when preparing the Envrironmental Impact Statement draft.

Please confirm that you have recieved this email and I will do my best to attend the meeting on June 24th at West High School. I look forward to seeing you at that meeting.

Sincerely,

Mark S. Lamon, Ph.D.
Vice President
Ocean Star International, Inc.
65 North Stone Road, Snowville UT 84336
Tel: 800-423-3447, 435-872-8217
Fax: 650-558-8086
email: mleekel@hotmail.com

From: mary ann wright [mailto:MAW@pbageo.com]
Sent: Tuesday, July 07, 2009 9:52 PM
To: Gipson, Jason A SPK
Subject: SLC pond expansion alternatives - comments to ACOE

7/7/09
Jason Gipson:

I submit these comments to the Army Corps of Engineers (ACOE) as both the former chief mining regulator for the state of Utah from 1994-2008, and as a true fan (35+ years) of the Great Salt Lake ecosystem.

There are 54,000 acres in the West Desert already devoted to evaporation ponds. They are on BLM lands and were abandoned without reclamation, due to a lack of a meaningful reclamation bond by MagCorp, now DBA US Mag. I spent a good 6 years in a futile struggle to increase the bond on the 54,000 acres of ponds from $110,000 to $6 M. The opportunity we have is that this is a potential alternative site to be considered for GSL Minerals' evaporation expansion (a pipeline will need to be re-installed). Also, wherever the GSLM expansion is located, it should be required that the state and BLM jointly hold a sufficient reclamation bond for removing all dikes and for needed environmental mitigation measures. Wildlife and ecological mitigation measures were not required at Magcorp by any agency and there were fatalities at some of the more concentrated (toxic) ponds. 113.1

My basic comment to ACOE is that it should require as an the alternative in its EIS for GSLM to look at using an existing disturbed area for its expansion of operations. This will not only preserve the lake and its ecosystem for migratory birds, but this alternative will not disturb lands and waters twice for an evaporative mining operation. The size of the expansion, 91,000 acres should be heavily questioned as well and an alternative of half that size should be considered. I am available at any time to delve further into this issue with the Army Corps. 113.2

I am sorry I was not able to make the Open House held at West High, I had intended to be there.

Best regards,
Mary Ann Wright,
Retired, Associate Director of Mining, Division of Oil, Gas and Mining
187 R Street
SLC, UT 84103
801-363-1412

From: Marysa Cardwell
To: Gipson, Jason A SPK;
cc: MRI Legal;
Subject: Expansion into the Great Salt Lake
Date: Monday, July 06, 2009 5:16:47 PM

Dear Mr. Gipson,

I am writing in behalf myself, my family, and Mineral Resources International, Inc. (MRI) in asking that the Great Salt Lake Minerals expansion not be allowed to take place. MRI's over all current and future environmental impacts on the lake and its surrounding areas are much less than what Great Salt Lake Minerals' ("GSLM") impacts to the lake are and will be with this proposed increase of approximate 91,000 acres of solar evaporation ponds whereas GSLM's expansion is akin to GSLM strip mining the lake and the long-term effects of such operations have historically proven themselves to be of a great detriment to the lands destroyed by such operations. 114.1

It is our fear that the application for major water rights will also have negative effects on the business environment of the Great Salt Lake. The loss of businesses and the attending jobs will hurt the surrounding communities and the state as a whole. In producing our products, MRI creates an exponentially greater value for the State of Utah per unit if brine, minerals and other elements from the Great Salt Lake than GSLM does. MRI's plans for future expansion would therefore increase that value to the State of Utah with less erosion to the eco systems, environments and aesthetics of the lake. This GSLM expansion would effectively preclude a direct, higher, better use of the lake by many others by GSLM, which is in essence, basically, a fertilizer and road salt company. Exorbitant costs to any other company on the Great Salt Lake due to the lake levels being dramatically lowered because of GSLM dikes on the lake and any GSLM canal system incorporated to bring brine in, especially in low water level years. 114.2

We also have many concerns about the effects on the environment, namely the bird and wildlife habitats, but also including the effects on the naturally 114.3
occurring insect populations. We are concerned as to how this will affect
the human population located on or near the lake. What ongoing costs will the government impose on GSLM due to the ill effects on all those affected by this expansion? And how can those costs be recouped for the individuals 114.4

and companies harmed? I am also concerned as how this will affect the	114.4
weather of the lake and surrounding environments. We would suggest,	114.5
possibly, phasing the expansion in over several years, rather than one grand expansion.	114.6

Sincerely,

Marysa Cardwell
MRI HR Manager
1990 West 3300 South
Ogden, Utah 84401-9774
marysac@mineralresourcesint.com
(801) 731-7040
(801) 731-7985 fax

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From: Matt Larson [mailto:mateolarson@gmail.com]
Sent: Tuesday, July 07, 2009 4:11 PM
To: Gipson, Jason A SPK
Subject: GSL Minerals Solar Evaporation Ponds Expansion Project (NOI: SPK-2007-00121)

Greetings Mr Gipson,

I wanted to take this opportunity to encourage you to work to deny the application submitted by Great Salt Lake minerals to expand their evaporation ponds. With the growth of the Salt Lake Valley and increases in water use combined with the ongoing droughts we have experienced, the lake is already under tremendous strain and is becoming dangerously low. I have kept a boat on the lake since 1999 and it is already hit two points where navigation has not been possible for larger boats. In addition to the damage to recreation, and more importantly is the damage it can do to the lake ecosystem and to the lake effect snow that Salt Lake enjoys. 115.1

Please do what you can to remember the communities that will be impacted if this expansion is allowed to occur.

I thank you greatly for your consideration of the overall issues!

-Matthew Larson

From: Michael O"Neil
To: Gipson, Jason A SPK;
Date: Wednesday, July 08, 2009 11:10:59 AM

Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010
RE: Public Notice SPK 2007 00121 / Great Salt Lake Minerals Corp.

8 July 2009

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.
This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 116.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. 116.2

If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 116.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape. 116.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Michael O'Neil
Assistant Professor (ret.) Oral English Studies
Université Paris 3
Institut du Monde Anglophone
5 rue de l'Ecole de médecine
75006 Paris
France

Mineral Resources International, Inc.

1990 West 3300 South • Ogden, UT 84401-9774 • 800-731-7866 • 801-731-7040 • Fax 801-731-7985

July 7, 2009

Attention: Jason Gipson, Project Manager
U.S. Army Corps of Engineers
Nevada-Utah Regulatory Branch
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Re: Written Comment Concerning Great Salt Lake Minerals Corporation's ("GSLMC") proposed expansion and permit application, referenced to Public Notice SPK-2007-00121

Dear Mr. Gipson:

I am filing this formal letter in relation to the general public comment period concerning GSLMC's permit application for proposed expansion of its operations, as outlined in the "Information Packet" prepared by the U.S. Army Corps of Engineers. An integral part of that overall permit application is the application to the Utah Division of Water Rights for the appropriation of an addition 353,000 acre feet of water from the Great Salt Lake.

I am the Chief Legal Officer of NorthShore Limited Partnership ("NorthShore") and Mineral Resources International, Inc. ("MRI"). NorthShore has the rights to appropriate 100-150 acre feet of water from the Great Salt Lake with a diversion point near Locomotive Springs, Utah, which is in the final stages of being perfected (Application No. A71874, Water Right 13-3723). NorthShore processes water from the Great Salt Lake into a solution of concentrated brine containing naturally occurring trace minerals, which is then used by MRI to manufacture food-grade mineral supplement products. MRI sells a full line of food-grade mineral supplement products produced from the waters of the Great Salt Lake, both in the United States and internationally, with significant international markets in China, Canada, Japan, Indonesia, Malaysia, Phillipines, New Zealand, Netherlands/Luxemburg/Belgium and South Africa. I am filing this comment on behalf of my clients, NorthShore and MRI, as well as in my individual capacity.

In our comment, we desire to primarily address the following issues:

(1) Do proposed alternatives that affect lands below the meander line follow the Great Salt Lake Comprehensive Management Plan and the Great Salt Lake Mineral Leasing Plan?
(2) Could major new evaporation surfaces and the removal of large amounts of water from the larger lake system impact normal water fluctuations of the Great Salt Lake?
(3) Would the proposed expansions impact designated beneficial uses of the Lakes's water?
(4) Would flushing of the proposed expansion ponds affect the uptake of selenium, mercury, and other heavy metals into the food chain of the Great Salt Lake?
(5) Would proposed expansions affect the salinity balance of the North Arm and other parts of the lake, including the South Arm?
(6) What would be the cumulative water quality impacts of the proposed expansions in conjunction with the past and foreseeable developments of the Great Salt Lake?
(7) How does minerals extraction from the Great Salt Lake contribute positively to the state's economy through jobs, taxes and royalties?

ISSUE NOs. 1-4: Do proposed alternatives that affect lands below the meander line follow the Great Salt Lake Comprehensive Management Plan and the Great Salt Lake Mineral Leasing Plan? Could major new evaporation surfaces and the removal of large amounts of water from the larger lake system impact normal water fluctuations of the Great Salt Lake? Would the proposed expansions impact designated beneficial uses of the Lake's water? How does minerals extraction from the Great Salt Lake contribute positively to the state's economy through jobs, taxes and royalties?

Great Salt Lake Comprehensive Management Plan

The current proposed plan for GSLMC's expansion of its evaporative ponds and extraction of brine from the Great Salt Lake **is incongruent with and contrary to** several aspects of the policies of the Great Salt Lake Comprehensive Management Plan, namely, (a) the encouragement of development of the lake in a manner which will preserve the lake and encourage availability of brines to lake extraction industries, (2) encourage the use of appropriate areas for the extraction of brines, minerals, chemicals, and petro-chemicals, (3) encourage the development of an integrated industrial complex, and (4) balance multiple-use and sustainability of the lake and its resources. *See*, The Great Salt Lake Comprehensive Management Plan Resource Document, pp.1-2. 117.1

Impact on Water Levels of Lake. The current plan of GSLMC requests a water right to extract an additional 353,000 acre-feet of salt water brine primarily from the North Arm of the Great Salt Lake (about 90% of the increased extraction would be from the North Arm). The Great Salt Lake Comprehensive Management Plan Resource Document, p.8, states that by extracting 100,000 acre feet of water from the Lake, one could expect a drop of one foot in the elevation of the Lake, which would expose approximately 36,000 additional acres of lake bed. Therefore, use by GSLMC of the entire water right, for which it has applied, could drop the level of the North Arm of the 117.2

Great Salt Lake more than 3 ½ feet, exposing more than 126,000 additional acres of lake bed, which would reduce the surface area of the North Arm of the Lake by more than one-third of its present level. Under the current proposal, this would be a permanent change to the surface area of the Lake, whereas the water will be extracted from the main body of water in the North Arm of the Lake and placed in diked evaporating ponds. 117.2

One of the enumerated major issues of concern vis-à-vis the Great Salt Lake Comprehensive Management Plan is that the Locomotive Springs area of the North Arm of the Lake is being impacted by decreasing water flows, which requires the Utah State Department of Natural Resources to develop strategies to mitigate and remediate this situation. *See*, The Great Salt Lake Comprehensive Management Plan Resource Document, p.7. The only inflow of fresh water to the North Arm of the Lake is from precipitation and from the groundwater from Curlew Valley. *See*, The Great Salt Lake Comprehensive Management Plan Resource Document, pp.7, 30. Such inflows have decreased considerably in the last 40 years. Accordingly, any permanent removal of water from the North Arm of the Lake would have a much more dramatic effect on the level of the North Arm of the Lake, than would removal of water from the South Arm of the Lake or from the fresher-water area on the northeast portion of the Lake. Therefore, GSLMC's proposed expansion would be diametrically contrary to this major objective and point of emphasis of the Great Salt Lake Comprehensive Management Plan, whereas GSLMC's proposed expansion would significantly, permanently reduce Lake levels in the North Arm of the Lake, and as a result, would more dramatically impact water flows in the Locomotive Springs area of the Lake. 117.3

The North Arm of the Great Salt Lake is currently at an elevation level of approximately 4,195 feet (*see*, U.S. Geological Survey). According to the U.S. Geological Survey, the elevation level of the North Arm of the Lake has been in the neighborhood of 4,195 feet since at least 2001 (with a fluctuation up to 4,195.5 in 2002, a fluctuation down to 4,194 in 2003, and a fluctuation up close to 4,196 in 2004). At current Lake levels, NorthShore is already required to transport the water it diverts from the Lake more than five (5) miles, by pumping such water through diversion canals. If a further substantial amount of water is displaced by GSLMC, it would require NorthShore to transport such water possibly one(1) to two (2) times further—an additional five (5) to ten (10) miles—making NorthShore's diversion of water from the Lake unreasonably expensive, and outside the bounds of good business economics. As a practical matter, allowing GSLMC to extract over 300,000 acre feet of water from the North Arm of the Lake—from an already depleted Lake level[1] would make brines unavailable to NorthShore and MRI, and to any users of brines in the North Arm, other than GSLMC. This would, in effect, put NorthShore and MRI out of business. 117.4

<u>Impact on other beneficial users of Lake water</u>. If GSLMC's expansion proposal is granted, increased costs of transporting water from the point in the North Arm of the Lake where it would be available—several miles from where it is currently available— 117.5

[1] The Lake is already in what is designated as "Zone 2" of the Great Salt Lake Planning Zones—an elevation level between 4192 and 4196 feet—the second lowest historical elevation zone of the Lake. *See*, The Great Salt Lake Comprehensive Management Plan Resource Document, pp. 16-21.

would also negatively affect every other entity that extracts brines from the Lake. A grant of GSLMC's proposal as it is presently constituted would, in effect, give GSLMC a monopoly on the use of the North Arm of the Lake for extracting of brines—no other entity could afford to extract brines from the North Arm of the Lake. Therefore, a grant of GSLMC's proposal would result in the use of "inappropriate areas" for the extraction of brines and minerals, rather than the use of "appropriate areas" for the extraction of brines and minerals—contrary to the comprehensive plan. A grant of GSLMC's proposal would also inhibit the availability of brines to lake extraction industries, rather than encourage and promote the availability of brines to lake extraction industries—contrary to the comprehensive plan. A grant of GSLMC's proposal would result in a one-dimensional use of the Lake and its resources, rather than encouraging the development of an integrated, multiple-use of the Lake and its resources—contrary to the comprehensive plan. Finally, a grant of GSLMC's proposal would result in a permanent depletion of the Lake's water level—one of the Lake's most important resources, which affects its accessibility—inconsistent with the policy of the comprehensive plan to sustain the Lake and its resources. 117.5

Great Salt Lake Mineral Leasing Plan

Such a large, irrevocable grant of water rights in the waters of the northern portion of the Great Salt Lake all at one time does not seem to be in line with the goals of the Mineral Leasing Plan for the Great Salt Lake—namely, (1) to create a framework for long-term policy direction for minerals management which also has flexibility to respond to the dynamic character of the GSL, (2) to integrate management of GSL's mineral resources with the lake's other resources so that all resources are managed for the health and integrity of the GSL ecosystem, (3) to identify compatible uses and conflicts among resource development and other resources on the GSL and provide for resolution of conflicts, (4) to monitor impacts of minerals operations and to collect, analyze and use data to maintain health and integrity of the ecosystem, including its mineral resources, (5) to monitor impacts of all diversion, dredging and diking operations and to analyze and use data to maintain health and integrity of the ecosystem, including its mineral resources, (6) to inventory and monitor GSL's mineral resources to assure wise and diligent development of mineral resources within GSL's boundaries, (7) to provide for the orderly leasing of mineral resources to existing and potential mineral lessees, and (8) to receive fair compensation for development and extraction of GSL's various mineral resources. See, The Great Salt Lake Comprehensive Management Plan Resource Document, pp. 120-121. 117.6

A large, one-time, irrevocable grant of expansion rights to one company clearly reduces the flexibility of the Department of Natural Resources to respond to new and better uses of the resources of the Great Salt Lake. Such a grant also makes it difficult to monitor impacts of mineral, diversion, dredging and diking operations in order to manage and maintain the integrity and health of the GSL ecosystem, because such action is irrevocable and irreversible—once GSLMC is allowed to go forward with its expansion project, regardless of the long-term consequences, it will become difficult and expensive to change things back. The management of conflicts among mineral resource 117.7

development and other resources becomes difficult once such a grant is made, because a new set of valuable commercial rights has been created for GSLMC. The grant of GSLMC's project as it is presently constituted does not appear to be consistent with the wise and orderly development and leasing of mineral resources to existing and potential mineral lessees, because it would basically create a monopoly all in one industry and one company, which is not the highest and best, most efficient use of such resources. 117.7

Impact on State's economy, taxes and royalties. NorthShore and MRI currently use only 100-150 acre feet of Great Salt Lake water per year, with little impact upon the other users of the Lake. Yet NorthShore and MRI have a combined workforce of approximately 40 workers. If GSLMC is only adding 50 new jobs, but must use 353,000 acre feet of Great Salt Lake water to do so, such use, by comparison, is an astronomically inefficient use of Great Salt Lake water. It would be much more responsible to allow for expansion of NorthShore and MRI and like industries that use the Great Salt Lake water for human mineral supplements. Not only is such use a higher, more profitable and better use, but it is an exponentially more efficient use of the Great Salt Lake water, than that proposed by GSLMC. It would seem economically irresponsible for the State of Utah to allow such a gargantuan expansion of use by GSLMC, when GSLMC is such an inefficient user of the Lake water.

In addition, based on information from The Great Salt Lake Comprehensive Management Plan Resource Document, pp. 119-120, it would appear that NorthShore pays a much higher royalty rate (percentage-wise) than GSMLC and other commercial users. It does not make sense to foreclose future expansion by NorthShore and other like users (and potential users) of the Lake water as human mineral supplements—by granting an inordinately large water right to GSLMC—when NorthShore's expanded use (and expansion of other like use) could generate a much higher royalty, percentage-wise, than other commercial uses of the water, and is much more efficient in generating jobs in relation to the amount of water used from the Great Salt Lake. 117.8

Although it would, of course, be a positive impact on the State to add jobs, royalties and taxes by allowing GSLMC's request for expansion, a much more responsible course of action would be to grant only a limited permit for expansion, or only allow expansion to the degree that GSLMC does not reduce the level of the North Arm of the Lake below current levels. For example, if Utah had some cold, wet water seasons, inflows into the Lake could raise the level of the Lake to "Zone 3" or above—in excess of 4196 feet of elevation. In that event, GSLMC could use such water in excess of the 4196 foot level without a significant impact on the current status quo. However, to allow GSLMC's expansion at the current water levels (Zone 2 or below) would have extremely detrimental effects on all of the other commercial users of the North Arm of the Lake.

As has been set forth above, MRI creates 40 jobs with use of merely 100-150 acre feet of water. Any variable that would impact the businesses of NorthShore and MRI would also impact all the businesses NorthShore and MRI indirectly support—a loss of the jobs created by NorthShore and MRI would have an economic multiplier effect in the

community of three to four times the loss of the NorthShore/MRI workforce. A grant of GSMLC's current application would completely impair NorthShore's existing water right, and would interfere with a more beneficial use of such water (for human consumption as mineral supplement products). If GSLMC is only adding 50 new jobs using this 353,000 acre feet of water, it would seem economically irresponsible for the State of Utah to allow such a gargantuan expansion—when NorthShore/MRI creates 40 jobs with use of merely 100-150 acre feet of water, and whereas GSLMC's expansion would extinguish the jobs created by NorthShore/MRI.

GSMLC's application appears to be, in part, filed for purposes of speculation—it does not appear that GSMLC needs the entire scope of expansion requested, but rather, has overstated the scope of the expansion it desires, in order to guarantee that it will get a lesser expansion approved—the expansion it actually desires (NorthShore and MRI have heard rumors to that affect. Finally, if GSLMC's entire request for expansion is granted, as a practical matter, GSMLC would have a virtual monopoly of the use of the northern portion of the waters of the Great Salt Lake concerning commercial uses—putting all smaller commercial users, such as NorthShore and MRI, out of business. The result would be a decrease in the diversity of the commercial uses of the Lake. 117.8

<u>ISSUES NO. 5-7</u>: Would flushing of the proposed expansion ponds affect the uptake of selenium, mercury, and other heavy metals into the food chain of the Great Salt Lake? Would proposed expansions affect the salinity balance of the North Arm and other parts of the lake, including the South Arm? What would be the cumulative water quality impacts of the proposed expansions in conjunction with the past and foreseeable developments of the Great Salt Lake?

Our understanding is that GSLMC removes the minerals it uses from the brines, primarily magnesium, potassium, sodium and chloride ions. However, GSLMC then flushes excess sodium chloride and low-grade potassium and magnesium salts back into the Lake. These solutions most likely contain selenium, mercury and other heavy metals normally found in Great Salt Lake brines. Therefore, flushing these excess brines back into the Lake would create even greater concentrations of heavy metals in the waters of the Great Salt Lake. Researchers have already discovered extremely high levels of methyl mercury in the Lake—25 nanograms per liter of water. *See,* http://en.wikipedia.org/wiki/Great_Salt_Lake, p. 7 of 10.

One of the commercial advantages that MRI gains by developing its mineral supplements from Great Salt Lake water, is that Great Salt Lake water contains almost identical proportions of trace minerals as sea water, but in higher concentrations. From research, MRI has concluded that sea water contains the exact proportions of trace minerals as they are needed by the human body. Therefore, if GSLMC discharges unused brines back into the North Arm of the Lake and changes the proportions of trace minerals found in Salt Lake Water, it would also affect MRI negatively, because it would make MRI's mineral supplement products less appealing to consumers, because of the change in trace mineral supplement content. 117.9

The following are also additional concerns that we would like to raise to the Army Corps of Engineer, without a more detailed discussion as we have done above -

• MRI's over all current and future environmental impacts on the lake and its surrounding areas are much less than what GSLMC impacts to the lake are and will be with this proposed increase of approximate 91,000 acres of solar evaporation ponds.	117.10
• GSLMC's expansion is akin to GSLMC strip mining the lake and the long-term effects of such operations have historically proven themselves to be of a great detriment to the lands destroyed by such operations.	117.11
• It is our fear that the application for major water rights will also have negative effects on the business environment of the Great Salt Lake. • The loss of businesses and the attending jobs will hurt the surrounding communities and the state as a whole.	117.12
• In producing our products, MRI creates an exponentially greater value for the State of Utah per unit if brine, minerals and other elements from the Great Salt Lake than GSLMC does. • MRI's plans for future expansion would therefore increase that value to the State of Utah with less erosion to the eco systems, environments and aesthetics of the lake.	117.13
• This GSLMC expansion would effectively preclude a direct, higher, better use of the lake by many others by GSLMC, which is in essence, basically, a fertilizer and road salt company.	117.14
• Exorbitant costs to any other company on the Great Salt Lake due to the lake levels being dramatically lowered because of GSLMC dikes on the lake and any GSLMC canal system incorporated to bring brine in, especially in low water level years.	117.15
• Concerns about the effects on the environment, namely the bird and wildlife habitats, but also including the effects on the naturally occurring insect populations.	117.16
• Concerns as to how this will affect the human population located on or near the lake.	117.17
• What ongoing costs will the government impose on GSLMC due to the ill effects on all those affected by this expansion? And how can those costs be recouped for the individuals and companies harmed?	117.18
• Concerns as how this will affect the weather of the lake and surrounding environments.	117.19
• Suggestion for, possibly, phasing the expansion in over several years, rather than one grand expansion.	117.20

We are also with this letter, requesting a public hearing to be held to consider this application. The reason for this request is that this is a matter that would have a	117.21

significant impact on the entire Wasatch Front and it would appear at this time that many citizens, private and public, of the area are not aware of this proposal and should be allowed a hearing.	117.21

Should you have any questions or wish to discuss this matter, please, certainly feel free to give me a call, at (801) 731-7040, ext. 389.

Very Sincerely,

Blynn A. Simmons
Chief Legal Officer for
NorthShore Limited
Partnership and Mineral
Resources International, Inc.

From: drvogel
To: Gipson, Jason A SPK;
Subject: Public Notice SPK-200700121
Date: Thursday, July 09, 2009 5:19:11 PM

Dear Mr. Gipson: We ask that you reject the application of Great Salt Lake Minerals to add to its evaporation ponds in Great Salt Lake. If allowed the dire environmental consequences for birds and animals and humans will be far in excess of any economic benefit to Utah or our nation. We two weeks ago made two trips to the lake with visiting grandchildren who were fascinated with its international status for migrating birds. Please do not disappoint them or us by allowing further and perhaps devastating and irreversible degradation to this international treasure. Yours truly, William and Donna R.Vogel, 49 year residents of Utah. 118.1

From: Rachel White
To: Gipson, Jason A SPK;
Subject: policy number SPK-200700121 Great Salt Lake Minerals Plan
Date: Thursday, July 09, 2009 6:01:36 PM

Hello Mr. Gipson,

I would like to submit a comment opposing the application by Great Salt Lake Minerals to expand the size of the evaporation ponds on the Great Salt Lake. I think that further expansion of this industry will pose unacceptable threats to the migratory bird habitat on the lake, and should not be permitted. 119.1

Thank you for considering my comments.

Sincerely,

Rachel White
625 West 500 North
Salt Lake City, Utah 84116

From: Richard Middleton
To: Gipson, Jason A SPK;
Subject: SPK-2007-00121: Expanded evaporation ponds for minerals extraction from the Great Salt Lake
Date: Saturday, July 04, 2009 9:04:54 AM

I am greatly concerned by the application by the Great Salt Lake Minerals Corporation to construct the Solar Evaporation Ponds Expansion Project. This extremely large expansion would convert considerable areas of the Lake into impoundments, require substantial additional water rights, and discharge immense quantities of waste brine into the Bear River Bay. It has the potential to cause very significant environmental damage to the lake and to its surrounding wetlands and shoreline. It therefore appears to pose a serious threat to a wildlife resource of national and international importance.

In the present tough economic times, schemes such as this are politically attractive: they can provide local jobs and additional revenues to the state, and help avoid the need for tax increases. But personally I would be horrified to see the Lake sacrificed to short-term expediency. I trust that the Corps, with its professional expertise and responsibility to represent the interests of all Americans, will take a much broader longer-term view. Somehow a solution must be found that protects the Lake's function as a vital aquatic habitat for birds, especially the hundreds of thousand of migrants. If this entails a substantial scaling-back of the expansion proposals, so be it. 120.1

Yours sincerely,

Richard Middleton
--
Richard Middleton,
331 North Main Street,
Salt Lake City,
UT 84103
Tel.: (801) 521 6782

From: canyon office products
To: Gipson, Jason A SPK;
Subject: GSL Minerals, SPK207-00121
Date: Tuesday, June 02, 2009 11:19:59 AM

Dear Mr. Gipson:

I am writing in support of the request of Compass/GSL Minerals in their effort to expand their evaporation ponds on the west
side of the Great Salt Lake. In my view, their operations have a fairly benign impact on the environment while providing vital
commodities to our nation's agricultural, commercial and transportation needs.

They provide much needed, well paying jobs for our community and
contribute generously to local organizations. 121.1

Most importantly, not enough attention is given to the fact that GSL has offered to give up leases they now control on tens
of thousands of acres on the east side of the lake. I am told that the area they are willing to give up is much more valuable
habitat for wetland plants and wildlife.

Sincerely;

Robert Hales
4684 Signe Lane
Ogden, Utah 844403

From: Robert Wilson
To: Gipson, Jason A SPK;
Subject: public comment GSL Mineral expansion
Date: Monday, July 06, 2009 6:06:06 PM

To whom It may concern:

I wish to go on the record as opposing the current proposed expansion of solar evaporation ponds by Great Salt Lake Minerals in the the northern bays of Great Salt Lake.

Water loss from solar evaporation ponds will increase the net evaporation from the lake. This, in turn will increase the salinity of the lake and decrease it surface area and shoreline. 122.1

Periodic "washing" of evaporation precipitate will flush highly concentrated brine into the lake. Though the brine is being returned to the basin of origin, it is being returned at unnaturally high concentrations which are toxic to some organisms in the lake. As such, the washing effluent is pollution that should be mitigated. Doubling the area of the ponds will produce a proportinate effluent. 122.2

During times when the lake is decreasing in volume, which includes the next century if climate predictions are correct, expanded ponds will have an increased demand on decreasing resources. GSLM is not the only solar evaporation operation on the lake, and other evaporation mines will also increase their demand on a decreasing resource. This is the positive feedback cycle popularly known as the tragedy of the commons and one that should be avoided if we are to have lake with functioning biolgoical communties that can support the multiple values assigned to the lake by our community. These include evaporative mining, brine shrimp harvest, migratory birds, recreation, aesthetics, and dust control. 122.3

The expansion as proposed likely would not be allowed in fresh water or marine basins but appears legal due to the ambiguity of the laws that apply to Great Salt Lake. My hope is that the regulatory system charged with protecting the resources of the lake will create policy that allows for the long term sustainability of all resources of the lake while including many possible scenerios of climate, population, and economy. In my view the current proposed expansion exceeds limits of sustainable use. 122.4

Thank you for taking my comments,

Robert Wilson
Salt Lake City, Utah

From: Robert Neill
To: Gipson, Jason A SPK;
Subject: GSL Minerals" request
Date: Friday, July 03, 2009 11:32:44 PM

I strongly oppose the request for expansion (Public Notice SPK-2007 00121) by GSL Minerals. A change to the ecosystem of this magnitude will certainly cause significant alterations to this valuable resource. Allowing a private for-profit group to challenge this natural system in this way should not be permitted. 123.1

Sally Neill

From: sdcheney@hotmail.com
To: gipson@usace.army.mil
Subject: Comment re: SL Minerals lease application and the Great Salt Lake
Date: Thu, 9 Jul 2009 11:13:56 -0600

Dear Mr. Gipson:

I am writing to comment about the Salt Lake Minerals Corp. pending application to lease additional lake-bed acreage of the Great Salt Lake to expand its fertilizer mining industry.

I strongly oppose the application, and I oppose any further industrial development of the Great Salt Lake.

As you know, the Great Salt Lake is an unique ecosystem, providing habitat for migratory birds and all the other plants, insects and ecological conditions that sustain those birds. The GSL ecosystem affects wasatch front climate conditions which also affect the state's economy. The role the Great Salt Lake plays in the over-all life balance in Utah and across the great basin and intermountain west remains largely unexplored. Salt Lake Mineral's plans could adversely alter a delicate balance in ways we don't yet fully understand. 124.1

I'm not convinced there has been enough research on the impacts of SL Minerals' proposed expansion on the GSL ecosystem. The ecosystem is fragile. Disruption of the balance could have irreversible effects. I believe we have a duty to preserve the unique natural conditions of the lake.

There are other policy concerns relating to the use of public resources for the continued economic benefit of a few corporations and their employees. I don't believe it is in the public's interest for the Corps of Engineers to ensure SLM's corporate expansion. Apparently they are doing fine at the current rate of production . . . but that is not really a factor the Corps should consider. 124.2

Suffice it to say that I oppose the application, and urge you and the Corps to deny it.

Thank you.

Scott D. Cheney
520 East Porter Lane
Centerville, Utah 84014
sdcheney@hotmail.com

From: Scott K. Jenkins
To: Gipson, Jason A SPK;
Subject: (no subject)SPK-2007-00121 Public Notice Number
Date: Wednesday, July 08, 2009 9:08:50 AM

Dear Jason,

The purpose of this e-mail is to comment on Great Salt Lake Minerals expansion. I have been a neighbor to GSL all of it existence. I have had many opportunities to spend time on their dikes and at their plant. They are a wonderful company. They employ lots of people from western Weber county. We from the western part of the county consider them tremendous cooperate citizens, and great neighbors. The need for the products they harvest and create continues to grow crossed the United states and else where in the world. The State of Utah collect taxes and fee's from the sell and harvest of these products, and is a large beneficiary. The continues growth of this company is very beneficial to all involved, and is necessary in my opinion. >From the point of the 125.1

environmentalist, I be leave this is a very responsible expansion. There is almost no environmental impact to the area. The birds that migrate through the area are not bothered buy this.. The State of Utah has given there approval of this expansion and I encourage you to do the same. It would be the responsible thing to do. 125.2

Respectfully

Senator Scott K Jenkins, District 20, Weber County , Utah

From: S. Paul
To: Gipson, Jason A SPK;
Subject: RE: Public Notice SPK-2007-00121 / Great Salt Lake Minerals Corp.
Date: Wednesday, July 08, 2009 10:00:28 AM

To: Jason Gipson / Nevada-Utah Regulatory Branch / 533 W. 2600 South Suite 150 / Bountiful, UT 84010

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.

This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 126.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 126.2 126.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic *Spiral Jetty* (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are 126.4

integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the *Spiral Jetty* in this unique landscape. 126.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Serge PAUL,

Lecturer of English and Art History, Ecole des Beaux-Arts / University of Avignon, France

8 b chemin de Fournes / 30210 Fournes, France / +33664322160

From: Ted McGrath
To: Gipson, Jason A SPK;
Subject: Comments regarding Public Notice SPK-2007-00121
Date: Saturday, July 04, 2009 2:34:44 PM

Having attended the public meeting at the Comfort Suites Hotel in Ogden on June 9, and reviewed some of the material presented at that meeting as well as the Information Packet provided, we would like to furnish some comments regarding the environmental assessment of the proposed Great Salt Lake Minerals (GSLM) Corporation Production Expansion on the Great Salt Lake as described in Public Notice SPK-2007-00121.

The Great Salt Lake and its surrounding wetlands provide critical habitat for migrating and nesting birds and the possible impacts of this project on avian habitat must be a central part of the environmental assessment of this project. The Information Packet provided does a good job of listing issues related to possible impacts on avian habitat and these issues must be addressed in the environmental assessment. 127.1

Habitats of most importance which will be impacted by this proposal are Gunnison Island and Bear River Bay. The pelican rookery on Gunnison Island must be protected from human disturbance and from access by predators. The siting and operating characteristics, especially noise levels, of pump stations that are part of the proposed Western Pond Expansion, need to be explicitly considered so as to plan for minimum disturbance to Gunnison Island. The possible impacts of this proposed project should be assessed in conjunction with the possibility of oil and gas exploration in the North Arm, and an effort made to assess the cumulative impacts all these activities. 127.2

The effect of the proposed pond expansion in Bear River Bay upon fresh water flows and water and habitat quality needs to be carefully considered. It was evident from the presentations at the public meeting that these issues in Bear River Bay are extremely complex and not well understood, and the impacts of the Eastern Pond Expansion may be very difficult to predict. In this circumstance, a very conservative approach to assessment must be made, i.e. only those parts of this proposal which are certain not to have negative impacts should be permitted. 127.3

The possible effects of expanded evaporative operations on the entire Great Salt Lake are likewise complex and not well understood. The impacts on future lake levels, on salinity levels, brine shrimp habitat (a major Great Salt Lake industry) and on brine fly production (an important food source for migrating birds) are all some of the issues that will need to be included in the assessment. As stated above, in such complex situations, the approach to assessment of these impacts should be very conservative. 127.4

Consideration should be given to placing restrictions of operations of the permittee so as to mitigate any future adverse impacts of future operations. If lake levels fall too low, GSLM should be constrained from pumping. Since possible impacts of this proposal on lake levels is not well understood, it would be prudent to be able to limit 127.5

pumping if it turned out to have adverse effects at some future time. Also, GSLM should be	127.5
required to perform predator control on any new dikes built into Bear River Bay in order to minimize impacts on nesting and resting birds.	127.6

Air quality and aesthetic considerations are also issues that must be addressed. The impact on air quality of operation of diesel pumps and of dike construction and	127.7
maintenance activities must be assessed. Aesthetic considerations should include any visual	
impact on the Spiral Jetty and effects of the proposed pond expansion on the algae growth which results in the reddish water that attracted the artist to construct the Jetty at that	127.8
particular place. If diesel pumps might be replaced with electric pumps at some point, the	
visual impacts of the infrastructure necessary to provided electricity at such a remote location needs to be assessed.	127.9

We appreciate the opportunity to furnish these comments. As we have had some trouble with our email recently, we would appreciate it if receipt of this message could be acknowledged.

Ted and Carolyn McGrath
Eden, Utah

From: Todd Bangerter
To: Gipson, Jason A SPK;
Subject: Public Notice Spk 2007-00121 GSL minerals expansion
Date: Monday, June 15, 2009 7:50:01 PM

Mr. Gipson,
I am writing in regards to the proposed GSL Mineral expansion project.
I feel that this project should not go through! The negative effect it will have on wildlife is un irreplaceable! Adding 8000 acre's of salt evaporation ponds to the bear river bay will endanger the millions of migrating water fowl that visit that part of the Great Salt Lake every year! There will be unknown changes in the the water that will kill many of the freshwater plants that the migrating water fowl depend on such as sego pond weed. Not to mention that the loss of lake shore will be irreplaceable! I feel that the negative aspects of this project far out way the positive! Please take these few examples into consideration. 128.1
Sincerely,
Todd Bangerter

Windows Live™ SkyDrive™: Get 25 GB of free online storage. Get it on your BlackBerry or iPhone.

From: Tom Tripp
To: Gipson, Jason A SPK;
cc: Mike Legge; Don Silva Jr.;
Subject: NOI: SPK-2007-00121 - Great Salt Lake Minerals Corporation Solar Evaporation Ponds Expansion
Date: Thursday, July 09, 2009 5:05:23 PM

Comments on the proposed Great Salt Lake Minerals Solar Evaporation Ponds Expansion:

US Magnesium has conducted mineral extraction on the South West part of the Great Salt Lake since 1972 at its facility in Tooele County. US Magnesium uses the water of the Great Salt Lake as its raw material to manufacture a variety of products including: magnesium metal, salts, brines, chlorine, and other associated by products. US Magnesium employs more than 400 people and contributes millions of dollars annually to the State and local economies. Importantly US Magnesium is the only primary producer of magnesium metal in North America. Magnesium is an important commodity for a variety of purposes as reducing automobile fuel consumption, aluminum alloying and Dept of Defense purposes.

Through a contractual partnership US Magnesium also provides concentrated brines derived from the lake as a raw material to Cargill Salt, perhaps the largest sodium chloride salt producer on the Great Salt Lake.

US Magnesium is wholly dependent (as are the other mineral extractors on the Great Salt Lake) on access and availability of the water on the Great Salt Lake for raw its materials. US Magnesium would ask that the U.S. Army Corp of Engineers carefully consider the potential impacts that the proposed Great Salt Lake Minerals pond expansion could have on the lake and the existing Great Salt Lake based mineral extraction businesses. 129.1

Among the potential negative impacts is the possibility that the increased amount of lake water removal envisioned by the Great Salt Lake Minerals pond expansion will lower the lake's elevation. This would cause the shoreline to recede from the existing lake water intake points that the mineral extraction industries depend on for their raw materials. This possibility would be of particular importance during periods of low lake surface elevation (such as the current case.)

If the Great Salt Lake Mineral’s proposal results in a lower lake elevation, it will cause US Magnesium and other mineral extractors to extend and/or expand canals, move pump stations and modify other facilities to compensate for that change. This

would necessitate a substantial expense, permitting requirements and efforts and a potential disturbance to the environment. A lower lake elevation may restrict the water volume intake and reduce revenue and productivity until such time as facilities could be modified. Not every operation is in a geographic position to resonably move intake facilities. A receding shoreline/diminishing lake elvation could also result in at least diminished production, reduced revenue, and reduced employment without easy remedy. In the extreme case a lower lake level could affect a mineral extraction business's overall viability.	129.1

US Magnesium asks that the U.S. Army Corp of Engineers apply its considerable expertise in evaluating this proposal so that the current mineral extraction companies won't be disadvantaged.

If I can clarify these comments please contact me.

Sincerely,

Tom Tripp
Technical Services Manager
US Magnesium
801-433-4068 Phones
801-433-4058 Fax
ttripp@usmagnesium.com

UTAH WATERFOWL ASSOCIATION

UTAH WATERFOWL ASSOCIATION

Preserving Utah's Waterfowl, Waterfowl Habitat and Utah's Rich Waterfowling Heritage

July 7, 2009

Jason A. Gipson, Project Manager
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, UT 84010
jason.a.Gipson@usace.army.mil

Re: Great Salt Lake Minerals Expansion Request
Public Notice SPK-2007-00121

Dear Mr. Gipson,

The Utah Waterfowl Association will be jointly submitting comments with the Friends of Great Salt Lake and others; however, we are also, in addition, submitting the comments below.

The Utah Waterfowl Association represents the interests of the 15,000 to 20,000 waterfowlers in the State of Utah. Virtually all of these waterfowlers hunt, bird watch and boat on the Great Salt Lake, often on areas of the Lake that are not frequented by anyone else. The Great Salt Lake Minerals (GSLM) request would have a significant impact on the wildlife, cultural heritage and economic interests and activities of Utah's waterfowlers.

Utah has a long and rich tradition of waterfowling, largely due to the abundant bird life of the Great Salt Lake and, specifically, Bear River Bay. Newspaper reports from the late 1800s and early 1900s describe how waterfowling at the time was Utah's "national sport" with scores of hunters heading into the marshes on the day before the opening of the season. Their campfires throughout the vast wetland complexes of the Lake were said to appear like a prairie fire.

The Box Elder newspaper regularly reported on the annual exodus to the marshes with locals traveling by wagon, horse, bicycle, boat and car. Special boats would transport people out into the fabled waterfowling grounds of Bear River Bay. Local rail lines provided special roundtrip fares to this area from Salt Lake City with transport from the rail station to the wetlands. Most hunters would return the next day with loads of ducks that would feed family and friends. The incredible abundance of Bear River Bay quickly gained national attention and papers were soon reporting that hunters from around the country were crowding through train stations in Ogden on their way to hunting grounds in Bear River Bay.

Utah's cultural connection with the Lake's bird life continued unabated through the 20th century. It led to the creation of some of the nation's first, largest and most impressive federal and state wildlife areas beginning with the Public Shooting Grounds in 1925 and continuing with the Bear River Migratory Bird Refuge soon after and other state acquired areas followed along the entire eastern shore of the Lake. The fact that such large acquisitions were made in a state of modest means at a time when most in the U.S. considered wetlands a nuisance at best suggests Utah's deep connection to the Great Salt Lake ecosystem.

The Lake's ecological richness has literally fed generations of Utahn's[1], has provided thousands of jobs and economic gain[2] and has been the focus of a rich cultural tradition.

From the foregoing, it should be apparent that the Lake generally and the northern end of the Lake in particular are not simply a plastic playground that can be rebuilt somewhere else to restore a trivial diversion of a few people. It is the epicenter of a longstanding tradition shared by tens of thousands of Utahns, an intertwining of the Lake's ecological richness with the lives of the people who have lived along its shores. It is a cultural heritage and a source of tremendous economic benefit to the state and its citizens. The Great Salt Lake Minerals proposal would seriously impact, imperil and possibly destroy much of this. 130.1

Some Specific Comments

GSLM already occupies 47,000 acres of evaporative ponds in the northern part of Great Salt Lake; 25,000 acres of ponds in the North Arm and 22,000 acres of ponds in Bear River Bay. When considered in the context of the acreage of the BRB, this is a substantial percentage that has already deprived the Lake of substantial habitat and Utahns of a substantial resource. Each incremental loss (here a big increment) further undermines the integrity of the area and makes it less productive and appealing for wildlife. In doing so, it vastly diminishes the area as a waterfowling resource. 130.2

At some point, the resource will be diminished sufficiently that the vestiges of once numberless flocks will provide little incentive for duck hunters to travel to remote and not so remote stretches of the lake and set decoys for ducks that will never come. In other words, diminishing the ability of the Lake to provide habitat at differing lake levels and of different types impairs its ability to sustain meaningful populations of wildlife.

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[1] It is estimated that Utahns harvest 200,000 to 300,000 ducks annually, largely from the Great Salt Lake. These feed some 50,000 Utahns. Utahns have relied on waterfowl from the Great Salt Lake and Bear River Bay and upper Gilbert Bay (Locomotive Springs area) as part of their diet for generations.

[2] Utah waterfowling, based almost entirely on the Great Salt Lake, supports annual festivals for duck hunters, sales of shotguns, hundreds of thousands (or more) shotgun shells sold annually, decoys, waders, "duck stamps", licenses, gas, food, boats, motors, coats, dogs, duck calls and catalogs of other paraphernalia. It has been an important economic contribution for over 100 years. As early as 1896, the Salt Lake Herald newspaper reported sales of well over two hundred thousand shotgun shells for opening day. By 1910, it was estimated that Utah duck hunters would expend 6,000,000 shotgun shells in one season. Truckloads of duck hunting ammo and other gear are still sold in Utah every year.

GSLM has proposed adding about 91,000 acres of ponds on the Lake, with 80,000 of those acres located within the confines of the Lake. This proposal follows their 2007 33,000-acre expansion proposal, which would be subsumed within the 91,000-acre proposal. Of the 91,000 acres, 83,000 acres would be located in the North Arm and 8,000 acres would be added to the northeast portion of GSLM's current Bear River Bay facilities.

To support this expansion, GSLM has also applied for 353,000 additional acre feet of water rights to be taken from the North Arm. Currently, GSLM holds 156,000 acre feet of consumptive water rights within the Lake as well as an additional 67,000 acre feet of water rights in Bear River Bay.

Use of this water will reduce the acreage available for bird use and substantially reduce the acreage available for hunting. The impacts will vary based on lake level; however, the loss of this water in the undiked portions of the lake places those natural areas on a knife's edge and at the mercy of the financial motives of industrial production. It also reduces, again, the ability of the Lake to produce, sustain and attract historically meaningful wildlife populations. 130.3

These impacts will stretch beyond the diked confines of the evaporation ponds or even the open areas of Bear River Bay. To the extent that waterfowl lose the open areas to feed, loaf and rest, the populations in the fresh water marshes will also be adversely affected. The Lake's avian resources cannot be maintained simply on the impounded fresh water marshes. Their bird populations and productivity could be substantially impaired by the impacts on fresh water areas. As a result, any consideration of impact (economic, recreation or otherwise) must include the impacts outside the footprint of the proposal.

With its current operation, GSLM processes 6 million tons of salts annually, removing 1.5 million tons for sale and dumping 4.5 million tons into Bear River Bay. Although it is unclear how much will be discarded into Bear River Bay with the expansion, based on size alone, it is likely that GSLM will process in excess of 26 million tons of salts annually. 130.4

Further, to the extent that the GSLM activities increase contamination, it poses additional risk not just to the bird life but also to the 50,000 or so Utahns (waterfowlers and their families and friends) whose diet consists in part of ducks and geese harvested from any portion of the Great Salt Lake. 130.5

Additional concerns associated with GSLM's expansion proposal:

- Depletion of Lake levels
  - Gunnison Island exposed to predators/humans;
  - Loss of wetlands on east side of the Lake; corresponding loss of waterfowl habitat
  - Loss of shorelines throughout the Lake
  - Exposure of mudflats; corresponding dust storms carrying toxic dust and fine particulate matter over populated areas
  - Possible destruction of ecosystem of North Arm
  - Increased proliferation of invasive species (phragmities) on east shoreline

130.6

- Construction of dikes/infrastructure to support expansion 130.7

- Depletion of shorelines in western portion of North Arm
- Destruction of wetlands & shorebird/waterfowl habitat in both North Arm and Bear River Bay
- Increased access to predators to formally isolated bird populations
- Increased noise, destruction of Lake habitat

130.7

- Recreation
  - Destruction of waterfowl habitat affecting duck hunters
  - Impediment to navigation throughout the Lake, but especially in Bear River Bay
  - Destruction of waterbird/shorebird habitat affecting bird watchers
  - Loss of scenic beauty, aesthetics; conversion of natural systems into industrial mining facilities

130.8

- Flushing of ponds into Bear River Bay
  - Huge increase in amount of excess salt flushed into Bear River Bay; currently 4.5 million tons, likely to exceed 20 million tons
  - Destruction of habitat due to increased salinity levels in Bear River Bay

130.9

Concentration of toxic substances

Summary

The GSLM proposal is massive in footprint, promises to dewater large portions of the Lake and will discharge huge quantities of toxins. All of these will adversely affect the Lake ecosystem. All of these will adversely affect the many Utah waterfowlers whose traditions and activities have long supported the Lake's preservation and prominence in our local culture. Ironically, among the portions of the Lake that stand to lose the most is the area that historically has been the most significant and the loss of which will produce the greatest ripple effect throughout the rest of the Lake system.

Sincerely,

John D. Ray
Utah Waterfowl Association
jray@fabianlaw.com
(801) 323-2256
168 Rolling Hills Drive
Centerville, UT 84014

cc: Jeff Richards

1 (Time commenced: 7:58 p.m.)

2 MR. R. JEFRE HICKS: I am President of the
3 Utah Airboat Association and I am on the Board of
4 Directors for the Utah Water Fowl Association. And 131.1
5 we are very concerned that expansion of this kind of
6 GSL's minerals will impact lake levels.

7 And in addition to impacting lake levels,
8 we're afraid of the impact on Bear River Bay on
9 migrating water fowl. This is an area of
10 hemispherical importance to millions of migrating
11 water fowl. And I think the loss of 8,000 acres in 131.2
12 that bay can't be mitigated. It can't be replaced.
13 And that part, I, personally, am just completely
14 opposed to.

15 Also, I'm concerned that on the west side
16 of the lake, digging more trenches to bring in water
17 to new evaporation ponds could have the potential of
18 further lowering lake levels during low water years. 131.3
19 That is a concern as a water fowler and as a user of
20 the lake, a recreational user of the lake. It will
21 impact myself and the people I know.

22 And we are -- I would say I am opposed to
23 large -- to the full -- to the full proposed
24 expansion, especially the 8,000 acres in Bear River 131.4
25 Bay.

1 And I think that's all I have.
2 (Time concluded: 8:01 p.m.)
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1 (Time commenced: 8:06 p.m.)
2 MR. JEFF PACE: I'm opposed to the
3 expansion that Great Salt Lake Minerals Corporation
4 wants to do. I think it'll impact the wildlife, the
5 recreation, the hunting, the bird-viewing
6 opportunities that are there.
7 I think that anymore development of the
8 lake like that, if you keep slicing away at it, it's
9 going to ruin the ecosystem of the lake. It's very
10 important to all the water fowl, the shore birds, the
11 wildlife that come in and out of there, either
12 migrating south or back up north. It'll impact them
13 dramatically.
14 And I think that any part of it -- any 132.1
15 part of the development with -- just some of it, I
16 don't think that's what Bio-West is telling the Army
17 Corps of Engineers or Great Salt Lake Minerals. I
18 think they're painting the picture that it's all
19 okay. I don't agree with that. So that's why I'm
20 against any of it, any development of it further than
21 what they already have. Just because the permit was
22 issued 40 years ago to say that they can have the
23 8,000 acres in the Willard -- or the Bear River Bay
24 area, that doesn't mean it's right.
25 That is a very critical and important part

1 of the whole system. And the stuff on the west side,
2 they've got to have that to make the east side work.
3 It's an all or nothing. It's not part. I don't 132.1
4 believe that. That might be the picture that's being
5 painted; that's not what's taking place.
6 MR. LYNN PACE: Plus, if they follow all
7 the laws that's been laid down since the 1800s, all
8 the court cases with the navigable waters --
9 MR. JEFF PACE: Environmental Protection
10 Agency, with the water quality.
11 MR. LYNN PACE: If they just follow the
12 law, this project should never happen. Ever.
13 Because it's all in black and white so far. From 132.2
14 what I've read about it, it's just all out there.
15 And they can't issue a permit.
16 MR. JEFF PACE: And you can't mitigate on
17 wetlands. And the Army Corps of Engineers knows you
18 can't replace wetlands. You can't go and take
19 another area and flood it and say, "It's wetland." 132.3
20 They know not even one percent about wetlands. You
21 can't replace it. Once they're destroyed, they're
22 gone.
23 MR. LYNN PACE: A good example of what
24 destroyed the lake is when they put the trestle
25 across there and divided the lake, the north end of

1 the lake is basically ruined because of that trestle.
2 And doing anymore development on it like that with
3 this industry will just continue to cause more
4 destruction. That's a prime example.
5 MR. JEFF PACE: Yeah. The causeway has
6 already ruined it. You can see the coloration of the
7 northern arm and the southern arm. It's already --
8 it's already discolored from that -- the destruction
9 of the natural water flow. I mean, there shouldn't
10 even be a situation -- I mean, there shouldn't even
11 be words that say a "north arm" and a "southern arm."
12 It should be the "lake," one piece, like it used to
13 be.
14 MR. LYNN PACE: Great Salt Lake Minerals
15 wants to say that there is two different lakes out
16 there. They want to say there is a "north lake" and
17 a "south lake." But it's still just one lake.
18 MR. JEFF PACE: It's one lake.
19 MR. LYNN PACE: That's why they call it
20 "The Great Salt Lake." Not the "North" or "South" --
21 MR. JEFF PACE: "Great Salt Lake A,"
22 "Great Salt Lake B," that's not the case.
23 MR. LYNN PACE: Anything else?
24 MR. JEFF PACE: Nope.
25 (Time concluded: 8:10 p.m.)

1 (Time commenced: 5:59 p.m.)

2 MR. JOHN LARSON: My question is, when the
3 company in charge creates the models for lake levels,
4 where is going to be the -- what point are they going
5 to use to reference the current lake or the reference
6 point for the lake level?

7 Most of the information I've seen here is
8 about the Bear River Bay side, which is windward --
9 leeward side of the Promontory Point. Having worked
10 on the Great Salt Lake for a couple of years, wind is
11 the major determinant for evaporation -- sun and
12 wind, of course, are the two major determinants. The
13 Gunnison Bay side is greatly affected by wind,
14 especially north wind. And I've seen the lake level 133.1
15 go down and within an hour, when the wind changes,
16 I've seen the lake go up a quarter to half a mile.

17 My concern is that the data in in-flow
18 information is mainly concentrated on the Bear River
19 side -- Bear River Bay side, as opposed to the
20 Gunnison Bay side, which is much larger, much more
21 open, does not have the windward projection of
22 Promontory Point and is much more exposed. And thus,
23 much more susceptible, much more influenced by wind.
24 And I think that's an important aspect when
25 determining the affect of taking more water out of

1 the lake. 133.1

2 And in closing, I would like to say that
3 the lake itself, although divided by this dike, this
4 cut off, the sum of its parts are more important than
5 the parts alone. And you have to look at the whole 133.2
6 of the lake as opposed to each part or bay, what have
7 you. And the lake itself is interactive,
8 interconnected and interrelated.
9 That's it.
10 (Time concluded: 6:02 p.m.)
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1 (Time commenced: 6:09 p.m.)

2 MR. RON PURGER: My concerns are -- we're
3 on the far north end of the lake, up by Monument
4 Rock. We have a company that we process minerals to
5 make a liquid mineral for vitamins and mineral drops.
6 And we, right now, with the lake level, we're out
7 five miles -- the lake is five miles out and we have
8 a canal we dug five miles. And our concern is, when
9 this lake water is taken out, how much farther is
10 that going to drop that lake? And is it going to put
11 us out of business? 134.1

12 I've been 15 years there. The company has
13 been 30 years in business.

14 And other concerns are is when they start
15 evaporating that much, weather, different things, 134.2
16 they're going to be a lot of changes. Weather.

17 I guess I really mainly worry about
18 putting our business right out. I'm concerned about
19 that. And you know, we've got our legal people here
20 and I don't know -- that's about it. So just to let
21 you know.

22 Thank you.

23 (Time concluded: 6:11 p.m.)

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1 (Time commenced: 8:10 p.m.)
2 MR. COREY ANDERSON: I guess where we're
3 at right now is looking at what issues need to be
4 addressed.
5 I represent Northshore Limited
6 Partnership. And we have salt ponds -- or mineral
7 harvesting ponds, rather, on the north tip of the
8 lake. And we operate a canal on low water years to
9 bring water to our ponds.
10 Our primary concern with this is what it
11 will do to the lake elevation. If it lowers the lake
12 elevation, then the economic impact to us is -- costs
13 us more to manage a longer canal. Really pretty
14 simple. But the more impact it has on the lake
15 level, the more economic impact it has on us. 135.1
16 It could conceivably have such an impact
17 to make our operation not feasible, to stop our
18 operation all together. I don't anticipate that, but
19 it's possible. And it needs to be looked at.
20 In terms of the impact on our operation,
21 we are, to my knowledge, the only food-grade mineral
22 harvesting pond on the Great Salt Lake. And from
23 these food-grade harvesting ponds, we manufacture
24 dietary supplements that benefit human health, with
25 millions of customers worldwide. So the impact, in

Ltr # 135

terms of human impact, is vast and all over the place.

Secondarily, brine concentration -- the impact of this project on brine concentration would also have an impact on us if it lowers the brine concentration overall. Then it requires an aquifer just to bring our project to completion, which is an economic cost. 135.1

Basically, I think that's it in a nutshell, those issues that need to be looked at.

(Time concluded: 8:13 p.m.)

1 (Time commenced: 7:47 p.m.)
2 MR. RORY WILLIAMS: Where do I start?
3 That's the most difficult point. I just came to see
4 what it's all about.
5 Seems to me like the land to the north --
6 north of the -- in the Gunnison Bay -- yeah, north on
7 the Gunnison Bay, seems like that is -- judging by
8 the wildlife, the biology, the annual usage -- yeah,
9 judging by that part, it doesn't seem like it's going
10 to make -- even the Dolphin -- the type of biology 136.1
11 that lives at the Dolphin Island is not going to make
12 that much difference.
13 Even for recreation over there, it's very
14 shallow. I mean, for boating.
15 I'm not sure -- it's interesting to me
16 because I heard a gentleman tell me about the north
17 arm, because it's so shallow, the land -- the
18 coverage of the water of the land has -- can
19 fluctuate widely. And so GSL needs the water. So
20 you know, it may not be -- depends on the year, I
21 guess, about the water covering the land, if it's
22 going to be useful to them or not. But that's up to
23 them. I mean, that's the risk that they're taking.
24 But it seems like there's been a lot of
25 research on the lake levels and I guess they have 50

1 years or so of data from the lake -- lake levels, you
2 might say, to give a good prediction, I would say, or
3 at least a reasonable prediction of lake levels, and
4 how that's going to affect wildlife. It's not going
5 to affect much of the recreation area. Doesn't
6 really involve that, boating and/or game -- wild game
7 hunting.
8 I mean, personally, I go to Antelope
9 Island and either go canoeing from the marina around
10 the north tip, or just go for a drive or take my
11 bicycle and go bicycling on Antelope Island. That's
12 what I love -- that's what my family loves to do.
13 We've done that for 15 years. Pretty views. It's
14 all gorgeous, except when there is not enough water.
15 Not much you can do about that, except pray.
16 I see -- around Antelope Island, I see a
17 good amount -- there is a tiny island just on the
18 north tip -- I'm not sure what that's called -- you
19 can almost walk out to it. You know, I've seen Blue
20 Herons out there. Gorgeous. Several Blue Herons out
21 there. And tons of seagulls and other things. And
22 once in awhile, you see a pelican. It's mostly what
23 I see.
24 Anyway, I just don't see how it's going to
25 have a large impact on the environment and on people

Ltr # 136

with their activities. Actually, I wish more people would go out and visit the west -- western part of the lake just to see what's out there, you know.

Well, that's it.

(Time concluded: 7:52 p.m.)

1 (Time commenced: 5:45 p.m.)
2 MR. MAX REYNOLDS: The State of Utah has
3 in place a multiple use plan for the Great Salt Lake.
4 And I emphasize "multiple use." Okay? And in that
5 land planning document, it stipulated areas for
6 industrial development. And I guess -- well, I am
7 very concerned that we are yielding to special
8 interest groups who, just as with the Legacy Highway,
9 are preventing job creation -- not only job creation,
10 but some of the better-paying jobs in the State of 137.1
11 Utah and significant increase in tax revenues which
12 will benefit the State of Utah.
13 The Great Salt Lake belongs to the
14 citizens of Utah, not to the special interest groups.
15 And I want to emphasize that the citizens of Utah
16 deserve a much heavier-weighted evaluation of how
17 they can benefit versus a few special interest
18 groups.
19 (Time concluded: 5:47 p.m.)
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Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010

Ltr # 138

RE: Public Notice SPK200700121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.

This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 138.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to 12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. 138.2

If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 138.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic *Spiral Jetty* (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the *Spiral Jetty* in this unique landscape. 138.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

[Name, job, address, country…]
Nicole Vitré Professeure d'arts plastiques
Lycée Valin
rue Barbusse
17000 La Rochelle FRANCE

From: Jean Roubion
To: Gipson, Jason A SPK;
Subject: Message de France
Date: Friday, July 10, 2009 12:13:11 AM

Jason Gipson

Nevada-Utah Regulatory Branch

533 W. 2600 South

Suite 150

Bountiful, UT 84010

RE: Public Notice SPK-2007-00121 / Great Salt Lake Minerals Corp.

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colored water. If production increases, a significant amount of open water in Gunnison 139.2

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Sincerely,

Jean ROUBION
Bellot 77510
FRANCE

Email: jroubion@hotmail.fr
Web: www.leductp.com
France: +33.607.73.98.10

From: Michele
To: Gipson, Jason A SPK;
Subject: policy # SPK-2007001121
Date: Thursday, July 09, 2009 11:35:48 PM

Please don't approve any plan for the Great Salt Lake that could damage this complex and fragile ecosystem. Too often greed and profit prevail over the health of our world, the wonders of nature and the things that are priceless. Once a species is gone it cannot be brought back. Apparently some of the birds too much development would threaten are very sensitive and fragile and their populations are diminishing. Please don't allow this to happen. We need to have scenery and animals to be awestruck by, to be amazed at their beauty and at the power and genius of their creator. We need them as much as they need our protection. We need them for our mental, physical and spiritual health. 140.1

Thank you. Michele Miller

WESTERN RESOURCE
ADVOCATES

July 8, 2009

Jason Gipson, Project Management
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010
jason.a.gipson@usace.army.mil

VIA Email and U.S. Mail

Re: Public Comments Relative to Public Notice SPK-2007-00121 – Proposed 91,000-acre Expansion of Solar Evaporation Reservoirs on Great Salt Lake

Dear Jason,

Thank you for the opportunity to provide the U.S Army Corps of Engineers (Army Corps or Corps) with comments relative to Public Notice SPK-2007-00121 – Proposed 91,000-acre Expansion of Solar Evaporation Reservoirs on Great Salt Lake (Mining Company Proposal). I make these comments on behalf of FRIENDS of Great Salt Lake, National Audubon Society, Wasatch Audubon Society, Great Salt Lake Audubon Society, Utah Waterfowl Association, Utah Airboat Association, Utah Rivers Council, League of Women Voters of Salt Lake, League of Women Voters of Utah, Utah Chapter of the Sierra Club, Western Wildlife Conservancy and Physicians for a Healthy Environment (collectively "FRIENDS"). We hope that you will gather the data necessary to carefully consider the following issues and concerns as you under take your statutory and regulatory obligations in reviewing the Mining Company Proposal.

I. Introduction

The local, national and international value of Great Salt Lake, its islands, and its wetlands cannot be overstated. Overall, 257 avian species use the Great Salt Lake ecosystem. Of these, 112 species are exclusively associated with the Lake's varied wetland areas, while 117 species reportedly nest on the Lake's periphery or on its islands. At least 33 species of shorebirds representing 2 to 5 million individuals use Great Salt Lake annually, stopping along routes that take them elsewhere in North, Central or South America. In addition, up to 5 million waterfowl migrate through the Lake each year.

Approximately 30 percent of the waterfowl migrating along the Pacific Flyway depend upon the Great Salt Lake wetlands. For these migrants, the Lake provides a critical food supply, allowing them to restore depleted energy reserves and fuel up for the rest of their migrations, sometimes doubling their body weight before they leave. In recognition of its role in these international flights, Great Salt Lake is designated as **one of only eight** sites with a "hemispheric" designation – as opposed to regional or international designation – of the 40 Western Hemisphere Shorebird Reserve Network sites in the United States.

UTAH • 150 South 600 East, Suite 2AB • Salt Lake City, UT 84102 • 801.487.9911 • Email:utah@westernresources.org
COLORADO • 2260 Baseline Road, Suite 200 • Boulder, CO 80302 • 303.444.1188 • Fax: 303.786.8054 • Email: info@westernresources.org
www.westernresourceadvocates.org

The importance of Great Salt Lake to the birds of the Americas is borne out by the sheer numbers that depend on its resources, including:

- 60 to 80 percent of the world's population of Wilson's phalaropes;
- One of the two largest staging concentrations of eared grebes in North America;
- The world's largest breeding population of white-faced ibis and California gulls;
- Over half of the entire breeding population of snowy plovers west of the Rocky Mountains;
- More than three quarters of the entire western population of tundra swan;
- One of the three largest breeding colonies of American white pelicans; and
- One of the ten largest wintering populations of bald eagle in the lower 48 states.

Not surprisingly, hundreds of thousands of bird watchers comb the shores of Great Salt Lake to be rewarded by incredible views of feeding, flying and nesting birds that journey thousands of miles to gorge on the bounty of our nation's largest inland "sea." The Lake also attracts recreationists enjoying other water-based activities such as sailing, boating, rowing, floating, wading and kayaking. Others hike, ride horseback and mountain bike to enjoy scenery, solitude and wildlife. Great Salt Lake also supports a robust community of waterfowl enthusiasts who not only enjoy hunting but are working to preserve and protect Utah's waterfowl, its unique and rich habitat and its rich heritage.

The North Arm of Great Salt Lake is an area of particular significance to the Lake's ecosystem. Commenting specifically on the Mining Company expansion proposal, the Utah Division of Wildlife Resources (DWR) and the U.S. Fish and Wildlife Service (FWS) noted that the North Arm of Great Salt Lake becomes critical to migratory and other waterbirds during high water years. Exhibits 1 & 2, attached. This is because, during these times, the salinity in the North Arm best supports brine shrimp – an important food source for many of the Lake's birds. 141.1

See DWR Comments at 2-3 (documenting the crucial importance of the North Arm to wildlife during the 1980s and early 1990s); July 19, 2007 Letter from Don Paul to Mr. Styler and Mr. Buehler at 2, Exhibit 3, attached ("During periods when the GSL elevation occurs between 4193' and 4206' above sea level (asl), there are several aquatic bird species that occur at the Lake in continental and hemispheric numbers of importance at the GSL and largely in the Gilbert Bay. These are the Wilson's Phalarope, Red-necked Phalarope, and the Eared Grebe. Some years these populations are in excess of 1,200,000, and 1,300,000 respectively during their seasonal occurrence at the GSL. At times these numbers of Wilson's Phalaropes and Eared Grebes

represent 50 to 70% of the population that occur in the world.”);[1] Great Salt Lake Mineral Leasing Plan at 33 (“[D]uring the high water years from 1983 to 1987, there were increase populations of brine shrimp in the north arm as salinity decreased [and] . . . eared grebes followed the brine shrimp into the north arm, abandoning sites along the Antelope Island causeway . . .”).

As recognized by the Utah Legislature, the North Arm is of significant importance as a refuge for one of the last remaining populations of the American white pelican, which breeds on Gunnison Island.[2] In addition, the North Arm offers outstanding recreational opportunities. This 141.2

unique and remote area is enjoyed for its stark beauty, wildlife and bird life and stunning landscapes. That this area is more difficult to access and less frequented than the South Arm does not diminish its significant recreational and aesthetic value. Moreover, although navigation to and from this area is currently impeded by the causeway, there is no reason to believe that this obstruction is permanent[3] and every reason to believe that the demand for access to this area will increase. 141.3

Likewise, Bear River Bay and the Willard Spur are of outstanding value for both recreation and wildlife habitat. Here there is a fishery that persists when the lake elevation is higher than 4,200 feet above sea level of vital importance to pisciverus birds. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake. 141.4

Recognizing these values, DWR has underscored the tremendous ecological importance of the lease parcels the applicant proposes to develop: 141.5

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[1] Mr. Paul also states: “This was the case in the high lake years of the 1980s (1983 to 1988). The migratory populations of Phalaropes and Eared Grebes were totally reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations which sometimes exceed 2,000 miles. Much of the foraging of these species took place along the west shorelines of promontory point, around Gunnison Island and west toward the Hogup Mountains (the ostensible GSL Minerals diking and ponding site), (DWR SLO files). Exhibit 3 at 2.

[2] Utah Code Ann. § 23-21a-2 (“The legislature of the state of Utah recognizes that the number of breeding sites of the American white pelican has been reduced from in excess of 50 prior to 1932 to only seven major sites in 1976 as a result of the removal of water barriers around breeding sites, loss of food supply, and **human disturbance of nesting colonies.** The legislature of the state of Utah further recognizes that Gunnison Island in the Great Salt Lake, one of the seven remaining pelican rookeries in North America, produces over 20% of the world's population of the American white pelican, and is the only remaining major pelican rookery that does not have refuge status. It is hereby declared to be the policy of the state of Utah that areas that will support certain threatened life forms shall be preserved for their benefit and for the benefit and enjoyment of present and future generations of people.”) (emphasis added)

[3] The causeway has stood only since 1959, when it replaced a trestle built in 1902.

These lands . . . are valued by DWR for periods when lake level falls below 4200' in Bear River Bay. DWR is particularly interested in lands which are north and northwest of the existing dikes . . . because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural lake within the bay.	141.5

IMC Kalium/DWR Memo, August 28, 1998, Exhibit 4 at 3. Moreover, this area of the Lake receives high levels of recreational use, is appreciated for its scenic beauty by many, and is critical to navigation of the Lake. Bear River Bay and Willard Spur enjoy a high number of days of recreational use. Air boat operators and others access this area though a public access site and two guiding services also operate in the area. There are at least two private duck clubs that are located along the shore of this area.	141.6

In order to support the Mining Company's proposal, the Mining Company has submitted an application for the appropriation of 353,000 acre feet of consumptive water rights – an extraordinary volume of water from Great Salt Lake. This volume of water totals almost as much water as flows from the Jordan River into the Lake each year. The Great Salt Lake ecosystem and the recreational and navigational values it supports simply cannot absorb an appropriation of this magnitude, especially in light of the existing cumulative demands on this internationally significant waterbody.	141.7

II. The Mining Company Expansion Proposal

Mining Company currently operates about 47,000 acres of evaporative reservoirs in the northern part of Great Salt Lake; 25,000 acres of reservoirs in the North Arm and 22,000 acres of reservoirs in Bear River Bay. North Arm brine is transported to Bear River Bay via the 21-mile Behrens Trench, taking a week to make the journey.

In 2007, Mining Company proposed expanding their operations by 33,000 acres. The proposed expansion would have consisted of an 18,000-acre pond adjacent to Gunnison Island, a 7,000-acre pond in the southern end of Clyman Bay and an 8,000 pond in Bear River Bay. While the lease for the 8,000 acre Bear River Bay portion was purportedly already approved by the Division of Forestry, Fires and State Lands (Division) prior to the proposal, the necessary leases for the 25,000 acres of reservoirs in the North Arm were also approved by the Division in July, 2007. Subsequent to that approval, the Army Corps began the Environmental Impact Statement process associated with the 404 permit for the entire 33,000 acres.

Subsequent to approval of the required leases by the Division but prior to approval by the Corps of Engineers, Mining Company expanded that proposal to 91,000 acres – of which 80,000 acres fall within the confines of the Lake. The new proposal is in place of, rather than supplementing, the 2007 proposal. Of the 91,000 acres 83,000 acres would be located in the North Arm and 8,000 acres would be added to the northeast portion of Mining Company's current Bear River Bay facilities.

To support this expansion, Mining Company has also applied for 336,360 additional acre feet of water rights taken from the North Arm and 16,640 acre feet of water taken from Bear River Bay. Currently, Mining Company holds 156,000 acre feet of consumptive water rights within the Lake as well as 67,000 acre feet of water rights in Bear River Bay.

Because the railroad causeway substantially reduces the interchange between the South and the North Arms, the withdrawals of water from the North Arm proposed by Mining Company will have a disproportionate impact on that portion of the Lake. This is especially true at lower Lake levels, when the effectiveness of the causeway breach is minimized. Adding to the impact is the purported lack of recurring maintenance of the two culverts by the railroad. As a result, and absent the effects of the proposed evaporation reservoirs, the withdrawal of this water from the North Arm will have an enormous and uneven effect on that portion of the Lake because of the North Arm's hydrologic isolation from the rest of the Lake. 141.8

In addition, the majority of the proposed 91,000 acres of new evaporation reservoirs will fall outside the natural boundary of the Lake at normal water levels. In other words, both because the reservoirs are close to the shore, and because Mining Company proposes to withdraw a huge amount of water from the main body of the Lake to sequester in these reservoirs, two impacts will occur: 1) the Lake will shrink below natural levels; and, 2) the sequestered water will be spread out over tens of thousands of acres. For these reasons, the reservoir water will be largely, if not completely, above the main body of the lake. As a result, the company's proposal artificially expands the surface area of the Lake and, thus, will result in an increase in the natural rate of evaporation. The combined impact of the detrimental and disproportionate impact of this withdrawal on the North Arm because of its hydrologic isolation and the increased rate of evaporation as a result of the evaporation reservoirs will clearly result in an unreasonable effect on the natural environment of the Lake. 141.9

III. Legal Framework

A. The Clean Water Act

Section 404 of the Clean Water Act, 33 U.S.C. § 1344, prohibits the filling or dredging of waters of the United States without first receiving a § 404(b) permit from the Army Corps. 33 U.S.C. § 1344(a), (d). A permit may not be issued if (i) there is a practicable alternative which would have less adverse impact and does not have other significant adverse environmental consequences, (ii) the discharge will result in significant degradation, (iii) the discharge does not include all appropriate and practicable measures to minimize potential harm, **or** (iv) there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Army Corps guidelines for permit issuance. 40 C.F.R. § 230.12(a)(3)(i-iv).

For non-water dependent projects, such as this one, it is presumed that a practicable alternative exists and the burden to clearly demonstrate otherwise is on the applicant. *Id.*

§ 230.10(a)(3); *Resource Inv's, Inc. v. United States Army Corps of Eng'rs*, 151 F.3d 1162, 1167 (9th Cir.1998). "Practicable" is defined at 40 C.F.R. § 230.10(a)(2) as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." The presumption for a non-water dependent project that a practicable alternative exists requires that an applicant make a persuasive showing concerning the lack of alternatives. *Sylvester v. United States Army Corps of Eng'rs*, 882 F.2d 407, 409 (9th Cir.1989) (internal citation omitted). Finally, a permit may not be issued "unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." 40 C.F.R. § 230.10(d).

Further, Army Corps regulations require that the Mining Company include a statement in its § 404 application that describes how impacts to waters of the United States are to be avoided or minimized. 33 C.F.R. § 325.1(d)(7). In this context, the application must include either a statement showing how anticipated impacts are to be compensated for or why such compensation should not be required. *Id*. However, nothing in the scoping material provided to the public indicates that Mining Company's application includes this material. Therefore, to the extent that the Mining Company's application was not in compliance with § 325.1, the Corps was obligated within 15 days of receipt of the application to request this information from the Mining Company and was further required to withhold public notice until these deficiencies were corrected. 33 C.F.R. § 325.2(a) & (b).	141.10

Additionally, we request that the Corps fully address, and provide a detailed explanation of, the Mining Company's proposal to mitigate each of the impacts listed below. It is insufficient for the Corps to merely mention that mitigation measures will be enacted, or to label the impact insignificant. To the degree that the Mining Company's Proposal results in impacts that cannot be mitigated, the Corps may not allow this Proposal to proceed.	141.11

B. NEPA

The National Environmental Policy Act (NEPA) requires federal agencies to prepare an Environmental Impact Statement (EIS) prior to taking major federal action. 42 U.S.C. §§ 4321-4370d. In the present instance, the Army Corps' issuance of a § 404 permit for the Mining Company Proposal must be considered a major federal action. The purpose of NEPA is to require agencies to consider environmentally significant aspects of a proposed action, and, in so doing, inform the public of the environmental concerns and considerations that affected the agency's decisionmaking process. In conducting the EIS, the Corps must create an administrative record that demonstrates that it followed NEPA procedures. As part of these procedures, the Corps is required to take a "hard look" at the environmental consequences of the Mining Company Proposal.

NEPA also requires a complete analysis of the purpose and need for the proposed project, 40 C.F.R. § 1502.13, along with a full and fair analysis of all reasonable project alternatives. 42 U.S.C. § 4332(2)(C)(iii), (E); 40 C.F.R. § 1502.1. In fact, the regulations implementing NEPA refer to the comparison of alternatives as the "heart of the environmental impact statement." 40

C.F.R. § 1502.14. Agencies must "rigorously explore and objectively evaluate all reasonable alternatives," then "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits," and explain why other alternatives were eliminated from detailed consideration. *Id.*

With regard to the Mining Company Proposal, the Army Corps should incorporate the analyses of the proposed 2007 expansion with the proposed 2009 expansion and produce one EIS. Although the scoping notice for the 2009 revised project shows that Mining Company may have made some changes to the 2007 proposed project (e.g., decrease the previously proposed 8,000 acre pond on the west shore of the lake along the north side of the railroad causeway to 6,000 acres), the 2007 proposed expansion has not been abandoned and remains effective. 141.12

An EIS must provide detailed explanation and "rigorous analysis" of "all reasonable alternatives" and comparative analysis of the environmental impacts of all alternatives considered. 40 C.F.R. § 1502.14. The Corps must not dismiss alternatives, without the required rigorous analysis, by simply saying that it "dismissed them due to economic, technical, logistical, and purpose and need criteria." The Corps must evaluate all reasonable alternatives, determine their viability, and place that information in the record. The final decision to grant or deny the permit should be informed by the record produced through such scientific analyses. 141.13

C. NHPA

Congress enacted the National Historic Preservation Act (NHPA) in 1966 because it found that "historic properties significant to the Nation's heritage [were] being lost or substantially altered, often inadvertently, with increasing frequency[.]" 16 U.S.C. § 470(b)(3); *see National Mining Association v. Slater*, 167 F.Supp.2d 265, 271 (D.D.C. 2001) (*reversed on other grounds*; *see also National Mining Association v. Fowler*, 324 F.3d 752 (D.C.Cir. 2003)). As discussed below, the shores of Great Salt Lake are rich in prehistoric archeological sites. To serve the public interest in "the preservation of this irreplaceable heritage," Congress declared as the goal of the Act, the maintenance and enrichment of this "vital legacy" for future generations of Americans. 16 U.S.C. § 470(b)(4); *see Southern Utah Wilderness Alliance v . Norton*, 326 F.Supp.2d 102, 108 (D.D.C. 2004).

NHPA accomplishes its purposes by "requir[ing] each federal agency to take responsibility for the impact that its activities may have upon historic resources. . . ." *City of Grapevine v. Dep't of Transp.,* 17 F.3d 1502, 1508 (D.C.Cir. 1994). Specifically, pursuant to section 106 of the Act, a federal agency "shall, prior to the approval of . . . any license . . . 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." NHPA, § 106, U.S.C. § 470f. An undertaking is any "project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including . . . those requiring a federal permit, license or approval . . . ." 36 C.F.R. § 800.16(y). Section 106 also requires that the agency afford the Advisory Council on Historic Preservation (Advisory Council) "a reasonable opportunity to comment" on the undertaking. *Id.*

The Advisory Council has promulgated regulations setting forth how federal agencies must comply with section 106. *See*, 36 C.F.R. § 800. First, an agency official "shall make a reasonable and good faith effort" to identify historic properties[4] that may be affected by the undertaking, and evaluate whether these properties are eligible for the National Register. 36 C.F.R. § 800.4(b) & (c); *see* 36 C.F.R. § 60.4 (criteria for assessing eligibility). The agency will next assess the possible effects of the undertaking on any eligible historic properties found, 36 C.F.R. §§ 800.4(d), 800.5(a), and determine whether any effects will be adverse. 36 C.F.R. § 800.5. "An adverse effect is found when an undertaking **may** alter, directly or indirectly, **any** of the characteristics of a historic property that qualify the property for inclusion in the National Register." 36 C.F.R. § 800.5(a)(1) (emphasis added).[5] If the agency finds potential adverse effects, it must seek ways to avoid or mitigate those adverse effects. 36 C.F.R. § 800.6. If the agency is unable to resolve the adverse effects of the undertaking, it must obtain comments by the Advisory Council and consider these in any decision to approve the undertaking. 36 C.F.R. § 800.7.

Importantly, at each step, section 106 requires consultation and communication among agency officials, the relevant State Historic Preservation Officer (SHPO), affected tribes and other interested persons, including the public.[6] *See* C.F.R. § 800.2; *see also City of Alexandria*, 198 F.3d at 124; *SUWA v. Norton*, 326 F.Supp.2d. at 108.[7] The purpose of this consultation is to involve agency official and others interested parties together in the identification of "historic properties potentially affected by the undertaking, [the] assess[ment of] its effects and [the] seek[ing of] ways to avoid, minimize or mitigate any adverse effects on historic properties." 36 C.F.R. § 800.1(a); *see also SUWA v. Norton*, 326 F.Supp.2d. at 108.

Finally, section 106 requires the agency to document its compliance with the process sufficiently "to enable any reviewing parties to understand" the basis of agency "determination,

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[4] Historic properties are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior." 36 C.F.R. § 800.16(l)(1).

[5] "Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative." 36 C.F.R. § 800.5(a)(1).

[6] As the regulations make clear "[t]he views of the public are essential to informed Federal decision-making in the section 106 process. The agency official shall seek and consider the views of the public in a manner that reflects the nature and complexity of the undertaking and its effect on historic properties . . . ." 36 C.F.R. § 800.2(d)(1). In addition, "[t]he agency official must . . . provide the public with information about an undertaking and its effect on historic properties and seek public comment and input." 36 C.F.R. § 800.2(d)(2).

[7] The Advisory Council regulations require consultation at every step of the section 106 process, including, for example, the scope of identification efforts, § 800.4(a)(3), the identification of historic properties, § 800.4(b); the evaluation whether a property is eligible for listing, § 800.4(c), a finding of non historic properties effected, § 800.4(d), 800.5(c), the application of the criteria of adverse effect, § 800.5(a)(1), and the resolution of adverse effects. § 800.6(a).

finding, or agreement" under the regulations. § 800.11(a); *see also, e.g.* § 800.11(d) (documentation requirements for finding of no historic properties affected); § 800.11(e) (documentation requirements for finding or no adverse effect or adverse effect).

D. Rivers and Harbors Act

Pursuant to 33 C.F.R. § 322.3, the Corps is required to issue a permit under section 10 of the Rivers and Harbors Act of 1899 for this project. Work or structures in or affecting navigable waters of the United States require permits issued by the Department of the Army unless exempt by regulation, if the work or structures impact the navigable capacity of the waterbody. *Id*. Because the Mining Company's proposal does not qualify for exemption, the Corps must complete a section 10 permit prior to allowing the project to proceed. 33 C.F.R. § 322.4. 141.14

E. Army Corps General Regulatory Policies

Pursuant to 33 C.F.R. § 320.4, the Corps must consider the cumulative impacts of the proposed activity and its intended use on the public interest. For activities involving § 404 permits, such as the Mining Company Proposal, the Corps may not issue the discharge permit unless the discharge complies with the Environmental Protections Agency's (EPA) § 404(b)(1) guidelines. 33 C.F.R. § 320.4(a)(1).

In reviewing the 2007 Mining Company Proposal, the EPA had several concerns of note. *See* Letter from Larry Svoboda to Jason Gipson (Dec. 21, 2008), Exhibit 5, attached. First, the EPA noted that the agency's initial review of the project scoping comments led EPA "to a **strong presumption** against the discharge of fill material into special aquatic sites identified within the project area." *Id*. at 2 (emphasis added). As the EPA stated, the applicant must "**quantitatively demonstrate** that an alternative, practical source for their product (potassium sulfate) does not exist in the market place." *Id*. (emphasis added). As outlined below, the Corps' improper narrowing of the available alternatives by dismissing any offsite land-based options for Mining Company's Proposal directly flies in the face of EPA's recommendations.

Second, EPA states that its preliminary analysis of the Proposal's impacts "suggests that the project as proposed will cause **significant degradation** of aquatic resources of the Great Salt Lake." *Id*. (emphasis added). To alleviate such impacts, the EPA suggests a number of mitigation procedures that the Corps should consider. Among those suggestions is consideration of an in-kind rehabilitation that would possibly restore and protect large wetland parcels in proximity to the project. *Id*. at 3. Alternatively, the EPA suggests a phasing proposal for the possible expansion tied to the success of the effectiveness of the mitigation program. *Id*.

Importantly, until the Corps has ascertained that the applicant has avoided and minimized impacts to the maximum extent possible, and until it is satisfied that no other on-site or off-site alternatives exist to minimize impacts, an analysis of any compensatory mitigation is premature. As the Corps' analysis of the Proposal relates to mitigation, the agency must evaluate the effect of the project on the public interest on its own merits prior to determining if compensatory mitigation is appropriate. 141.15

Third, in its letter, EPA focused on the need to analyze the cumulative impacts of the Proposal and agrees with the Utah RDCC that this analysis should take into account the impacts of the past 40 years of mineral extraction activity. *Id*. at 4. Additionally, the agency notes that the analysis should also analyze the effects of future urbanization on Bear River Bay by using Farmington Bay as a model for comparison. *Id*. Finally, the agency suggests that the cumulative analysis should take into account possible increased nutrient loading into Bear River Bay, along with the possibility of the Bear River Dam as well as oil and gas development in Gunnison Bay. *Id*. at 4-5.

IV. General Comments

A. Purpose and Alternatives

As presented by the Corps during the June 2009 public information meetings and in its public notice documentation, the stated purpose of the Mining Company Proposal is unreasonably narrow and erroneously and artificially restricts the range of practicable alternatives to the project. This is particularly true here where the applicant seeks strictly private gain by filling an enormous area of a water of the United States held in trust for the citizens of Utah. The purpose of the project should be rewritten more broadly so that less damaging practicable alternatives – such as continuing to acquire potassium offsite – are viable and considered in depth.

141.16

Illustrative of this unreasonable narrowing is the decision by the Corps to publish a list of Alternatives Considered but Dismissed from Detailed Analysis at the scoping stage of the environmental review process. *See* June 2009 Information Packet, Public Information Meeting on the Proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake at 21. Among the alternatives improperly dismissed are several land-based, offsite reservoirs areas located outside the confines of the Great Salt Lake. In the Information Packet, the Corps perfunctorily dismissed these alternatives due to "technical criterion" or "logistical criterion."

The Corps must consider the less damaging alternative of locating the requested evaporation reservoirs outside of the waters of the United States – above the bed of Great Salt Lake. Likely the most appropriate location for such reservoirs would be on the west side of the Lake, including in and around the Newfoundland Evaporation Basin. Examination of alternatives that construct evaporation reservoirs some distance from the shores of the Lake must be considered and the Corps may not prematurely dismiss these alternatives at the scoping stage. Such conclusions at this point in the environmental review process, before even beginning a detailed analysis of the project, without explanation, is improper. For instance, why specifically is an alternative not technically or logistically feasible? If the Mining Company indicates to the Corps that the project would be too expensive, the Corps must justify its decision to support the Mining Company's position by revealing to the public exactly how much more expensive each alternative is. 141.17

In any case, because the Mining Company Proposal is a non-water dependent project,[8] the presumption is that a practicable alternative exists. This presumption holds unless clearly demonstrated otherwise. Indeed, the Army Corps may not issue a § 404 permit unless the agency has independently verified all relevant information and provided detailed, clear and convincing information **proving** that an alternative with less adverse impact is impracticable. Here, such analysis underscores the need to restate the purpose of the project and undertake rigorous exploration of practicable alternatives. 141.18

While the number of alternatives that the Corps considered is much too narrow, the project description enunciated by the Corps in the Public Notice for this project – potassium sulfate extraction/mining – is much too broad. Such a general statement is of little use in evaluating the impacts of Mining Company's proposal because it does not clearly define the purpose behind the proposal. This is important because the stated purpose is critical in determining whether Mining Company's proposal is water dependent. Because the project description serves as a basis for the alternatives analysis, the Corps should have more clearly defined the purpose of its proposal. In other words, the more accurately the Corps defines the purpose of the project, the more accurately the Corps will be able to assess whether a land-based alternative meets that purpose. 141.19

Due to the possible substantial, detrimental impact of Mining Company's Proposal to the public interest, the Corps must accurately assess the need for this expansion. Further, the Corps must analyze the extent of the need and, hence, the extent of the impact. This especially applies to the amount of water Mining Company claims it requires for the expansion. Pursuant to 33 C.F.R. § 320.4(a) & (m), the Corps must consider the water supply and conservation associated with this proposal as that relates to the public interest. 141.20

B. Great Salt Lake's Hydrology

The Corps must also thoroughly analyze the impact of thousands of cubic yards of fill on the Lake's hydrology, flow, and navigational access. Under the 2007 proposal, 540,000 cubic yards of fill would be discharged into the Bear River Bay to create dikes and 900,000 cubic yards of fill will be discharged into open water in the vicinity of Clyman Bay to create additional dikes. The 2009 proposed expansion would add millions of cubic yards more of fill to the Lake in order 141.21

[8] The Mining Company Proposal is not water dependent. The relevant regulations state that where a project "does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose," it is not water-dependent. 40 C.F.R. § 230.10(a)(3). Plainly, mineral salts extraction need not occur within the water or a special aquatic site – it can occur on dry land. While access to Great Salt Lake may be necessary to extract minerals from Great Salt Lake water, that a pipe or pump may be located in the lake to gain access to the water does not mean that 80,000 acres of evaporation ponds must be located on the bed of the lake. Moreover, as Mining Company currently gets its potassium from mines on dry land, there is nothing about obtaining this mineral that requires access to or siting in special aquatic sites, much less Great Salt Lake.

to create the dikes needed to accommodate the new solar evaporation reservoirs. The Corps should also examine at what elevation the Mining Company would initially put in their dikes and to what level they would plan to raise the dikes if the lake elevation rose. The Corps must analyze the impact of putting such a large amount of fill on the Lake's hydrology, flow, and navigational access. The Corps should analyze the impact of invading the Lake with such a large quantity of foreign matter on water quality and hence, on aquatic life. 141.21

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company's planned project on the Lake's hydrology, the Corps must base its analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. Already the Utah State Engineer has approved water withdrawals from Great Salt Lake on an enormous scale. In addition, pending water appropriations seek to appropriate huge volumes of water from the Lake. Indeed, Mining Company itself currently has the authority to take 230 cfs, or 156,000 acre feet, from the Lake each year. The proposal to draw down the Lake by an additional 353,000 acre feet cannot be sustained. The plan will have significant adverse effects on the Lake and will seek to divert water from an already fully appropriated waterbody.

According to the Division of Forestry, Fires and State Lands, there are currently 11 perfected water rights to divert water directly from the lake totaling 362,306 acre feet a year. Great Salt Lake Comprehensive Management Plan Resource Document (Resource Document) at 13.[9] This use is consumptive. *Id.* The State Engineer has approved applications to appropriate an additional 444,562 acre feet of water per year from the Lake, also for consumptive use. *Id.* Finally, pending before the State Engineer are applications for 657,565 acre feet, largely if not completely for consumptive use, above and beyond Mining Company's current application for 353,000 acre feet of water. *Id*. Thus, appropriators are now entitled to consume a total of 806,868 acre feet of water from the lake each year – only slightly less than enters the Lake each year from **both** the Jordan and Weber rivers. *Id*. at 10. 141.22

When the amount of water requested in pending applications is considered, the total water demands on the Lake reaches 1,464,433 acre feet a year – more water than flows from the Bear River into Great Salt Lake each year. In this context, Mining Company requests an additional 353,000 acre feet. This pending application would raise demands on Great Salt Lake water to 1,817,433 acre feet per year – 76% of the water that enters the Lake each year from all sources. If the Mining Company application is approved, appropriators would be entitled to siphon off 1.2 million acre feet of water from the Lake each year.

Given that this expansion would likely force Lake levels to drop to their lowest recorded levels, the Corps must carefully analyze what impact the drop in Lake levels will have on: 141.23

- Sustainability of the Lake as a water of the United States;

[9] Available at http://www.ffsl.utah.gov/SovLands/gsl.php ("Resource Guide")

- Air quality, since some parts of the Lake may turn into dust; 141.24
- Quality of adjacent surface waters; 141.25
- Water quality; 141.26
- Archaeological sites in the vicinity of the Lake; 141.27
- Quality of surrounding human environment; 141.28
- Navigability; 141.29
- Quality of recreation activities; 141.30
- Melting of the mountain snowpacks; 141.31
- Attainment of NAAQS in Salt Lake, Box Elder, Cache, Davis, and Weber Counties. 141.32

The Great Salt Lake, through a process called "lake effect," increases the precipitation along the Wasatch Front and contributes to Utah's "Greatest Snow on Earth" at various ski resorts in the surrounding areas. The lake effect derives from added moisture to the atmosphere resulting from evaporation from the Lake's surface, and atmospheric instability, which is caused by the contrast in temperature between the lake water and the air. What impact will the Mining Company's artificially-assisted evaporative processes (through the placement of lake water in special reservoirs) have on the Lake's hydrologic cycle? 141.33

More specifically, the Corps must analyze the individual and cumulative impact of the "lake effect." Namely, will the increased evaporation adversely affect the Lake's hydrologic cycle and interfere with natural processes of evaporation that are critical to and responsible for creating the snow that fuels Utah's winter tourism industry? Additionally, what impact would such interference with the "lake effect" have on Utah's water supply?

The proposed project would result in about 80,000 acres of permanent adverse impacts to waters of the United States. The Corps must assess not just the impact of Mining Company's new consumptive activities—those associated with the proposed project—but also assess the individual, cumulative, and indirect impacts of the Mining Company's planned project-related consumptive activities, Mining Company's existing consumptive activities, as well as those of other industrial operators, and other reasonably foreseeable activities, on the Lake's hydrologic environment. 141.34

The Corps must analyze the impact of the various activities that will result from the planned project on the GSL's hydrology:

- Improvements to the Behrens Trench—excavating the trench wider and deeper or laying pipes in the existing trench;
- Purchasing and transporting SOP from the U.S. Magnesium ponds;
- Increasing SOP production by constructing an SOP processing plant within the U.S. Magnesium pond area;
- Other activities to support the new expansion.

141.34

C. Water Quality

The Corps should evaluate the effect of existing and proposed additional discharges of bitterns and other waste materials on sediment quality in Bear River Bay and on the South Arm. According to the Utah DWR, in order to accomplish a proper analysis of these discharges, the Corps should have at least one full year of data measuring the possible effects. Letter from W. Clay Perschon to GSL Minerals Study Team (Nov. 19, 1997) at 2, Exhibit 6 attached. Additionally, rather than simply focusing on the area between the Mining Company bridge and the railroad causeway bridge, or points south, DWR recommends a series of points to the north of where the discharges occur in order to ascertain the impact of the discharges throughout Bear River Bay. *Id*. at 4. The reason for this recommendation is because of the changing conditions and the wind tides that push salt water into the Bay. Id. at 1. Further, if there are other discharge points associated with the Mining Company Proposal outside of where the Company currently discharges their bitterns, those areas must also be evaluated for potential impacts. 141.35

The Corps should sample sediments in and near the vicinity of the discharges for mercury, methyl mercury, selenium, and other potential contaminants to the water. The Corps should evaluate the potential uptake, bioaccumulation, and biomagnifications of the above-mentioned metals and other contaminants in macroinvertebrates and in birds and other species.

The Corps should evaluate the effect of dry evaporation reservoirs as an area source of surface and ground water contamination. 141.36

The Corps should evaluate the effect of the introduction of extremely large amounts of fill (more than a million cubic yards, to create and maintain additional dikes) on water quality. In addition, the Corps should evaluate the potential for the fill, used to create and maintain the dikes, to introduce into the Lake, chemicals, biological agents, and other contaminants detrimental to the health of birds and other species. 141.37

Since water of high quality is necessary to keep the Lake's wetlands functioning properly and the processes working to ensure an ample safe food supply for the millions of birds that depend on it, the Corps must analyze the impact of the Mining Company's proposed expansion on the supply of the high quality water needed to keep the wetlands functioning properly and in a sustainable manner. 141.38

Further, since clean water is necessary to protect human recreation in and around the Lake, the Corps must analyze the impact of the proposed expansion on the continued availability of recreation opportunities on the Lake.	141.39
The Corps must consider the following factors in addressing the cumulative and individual impacts of the proposed project on water quality: • Utah's narrative water quality standard;	141.40
• The achievement and protection of all designated beneficial uses of Great Salt Lake;	141.41
• Significant mercury and selenium contamination of the lake and the potential of the project to exacerbate this contamination;	141.42
• Expert concerns raised by FWS and DWR;	141.43
• Reduction in open water in Bear River Bay and the resulting concentration of nutrients from sewage and irrigation sources;	141.44
• Interruption of water flows caused by diking;	141.45
• Impacts of fill material directly and indirectly;	141.46
• Impacts of changes to substrate;	141.47
• Impacts of evaporation of huge quantities of water;	141.48
• Effects of pond flushing, including in the Bear River Bay area where the introduction of more salt would change salinity, and possibly change the size and length of the salt tongue and alter other ecosystem values, thereby impacting fisheries and other wildlife, as well as other aquatic species;	141.49
• The use of existing and proposed pump stations, fuels, trucks and other vehicles, gravity flow trenches, causeways and other infrastructure;	141.50
• Potential catastrophic pollution of lake waters by an earth-quake-induced oil and gas spill or other contamination;	141.51
• Cumulative impact of drought, including drought induced by global warming;	141.52
• Cumulative impact of reasonably foreseeable population and development increases and increased water demand, run off and nutrient discharges;	141.53

- Cumulative impact of all other current and proposed mineral salts extraction and other extractive industries; and, 141.54

- Cumulative loss of wetlands and other ecosystem components that help to maintain or improve water quality. 141.55

The Corps must also quantify, qualify and fully understand the impacts to water quality stemming from existing mineral salts extraction activity and analyze these impacts cumulatively, including water use, concentration of pollutants in evaporation reservoirs, and the flushing of 141.56
evaporation reservoirs. The Corps must know the volume and quality of all water being used for all existing operations affecting the lake, as well as for the proposed expansion and consider the 141.57
impacts of this water use on non-impounded areas of the Lake. Construction of the dikes will disturb lake bed sediments and stir up contaminants. In addition, the use of motors, motorized vehicles and other equipment as a result of the development could adversely impact water quality. 141.58

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company planned project on water quality, the Corps must base its analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. The Corps must analyze thoroughly the impact of low Lake levels, due to the Mining Company's consumptive use of the waters of the Lake, on water quality and improved predator access (including people) to the Lake's wildlife resources, especially those on 141.59
Gunnison Island. The Corps should evaluate the effects of eliminating such a large percentage of the shoreline habitat on the western side of Gunnison Bay on snowy plovers and other species, including the actual or potential loss or degradation of freshwater springs in those areas. 141.60

D. Significant Degradation of Lake Ecosystem

The Mining Company's proposal for expansion, if granted, would result in significant loss of more than 80,000 surface acres of waters of the United States, as well as a huge volume of water. This project will have significant adverse effects on wildlife, special aquatic sites, life stages of aquatic life, wildlife habitat ecosystem diversity, productivity and stability, recreation, aesthetics, cultural resources, and other values critical to the people of Utah and the United States. Both individually and cumulatively, this project would result in the loss of too many acres of the waters of the United States and thereby jeopardizes the health of the Lake's remaining ecosystem and the survivability of the organisms and wildlife that depend on this ecosystem. Such a loss cannot reasonably be mitigated, especially given the types of special aquatic sites at issue and the poor track record of mitigation efforts around the Lake. Hence, the Corps must, at the minimum, consider individually and cumulatively, the impacts of the Mining Company's proposed and existing projects on all the values detailed in § 230.10(c). 141.61

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company's planned project on ecosystem degradation, the Corps must base its 141.62

analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. 141.62

E. Navigation, Public Recreation, and the Public Interest

The Corps must consider the following likely impacts from the planned project, on navigation, public recreation, the public interest and aesthetics:

- The discharge of dredge or fill material will further limit navigation of and public access to the shoreline, as well as previously open waters of Great Salt Lake. This will in turn limit the ability of the public to recreate freely on the Lake and will concentrate the public's use in a smaller nonviable area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas; 141.63

- The 8,000 acre expansion proposal will, at times, cut off water flows and access to and from Bear River Bay. This will severely limit the ability of the public to recreate freely on the Lake and will concentrate public use in a smaller area. This in turn will adversely impact navigation and recreation in these remaining, smaller areas; 141.64

- To the extent that discharge of dredge or fill material will adversely affect water birds and wildlife, as well as scenic values, public recreation that depends upon these values will be adversely impacted; 141.65

- Impacts to navigation and public access will be exacerbated by low water as Lake volume decreases and the shoreline shrinks; 141.66

- Diking will further impede navigation and access from one part of the bay to the other – access which is already significantly impaired by existing diking and conversion of a relatively intact ecosystem into evaporation reservoirs; 141.67

- Transforming the west side of the Lake into a more significant industrial zone will further result in a loss of quiet, solitude, scenic beauty and unparalleled remoteness. Similar impacts will be felt on the less remote, but more heavily used Bear River Bay and Willard Spur area of the Lake; and 141.68

- The proposed project will modify the natural setting and sounds of Great Salt Lake, making it an industrialized site. Thus, the impact of the proposed expansion on the aquatic beauty and aesthetics of Great Salt Lake is extensive. Cumulatively, this impact is even more significant, as a significant portion of the Lake is currently developed. 141.69

To adequately and effectively determine the individual, cumulative, and indirect impacts of the Mining Company's planned project on navigation, public recreation, and the public 141.70

interest, the Corps must base its analysis on the total annual volume of water to be used by *all industries* (not just the Mining Company) drawing water from the Lake. The Corps should 141.70

evaluate the effects of the withdrawal of the additional 353,000 acre-feet of water from the Lake needed to support this project, in addition to the 156,000 acre-feet of water that the currently has rights for, on the Lake's: (1) recreational value to the public; (2) aesthetic value to the public; (3) general economic value to Box Elder, Cache, Weber, and Davies Counties, and State of Utah, in particular, and to the United States, in general. 141.71

F. Aquatic Environment

With regard to the aquatic environment, the Corps must consider the significant cumulative adverse impacts that the proposed project will have on special aquatic sites and ecosystem values under 40 C.F.R. § 230.10(d). To that end, the Corps must make factual findings that quantify and qualify the short and long-term effects of the planned project on "the physical, chemical, and biological components of the aquatic environment." 40 C.F.R. § 230.11. 141.72

The Corps must also determine the cumulative effects of past, present and future discharges of dredged or fill material. As indicated by the relevant regulations, "the cumulative effect of numerous such piecemeal changes can result in major impairment of the water resources and interfere with the productivity and quality of existing aquatic ecosystems." 40 C.F.R. § 230.11(g)(1). For that reason, the Corps must determine the secondary effect on the aquatic ecosystem that will result from the Mining Company's Proposal. 141.73

For instance, the discharge of dredged or fill material will further concentrate human usage in non-developed areas, thereby impacting wildlife habitat in these areas. Gunnison Island, located close to the 25,000 acre expansion proposal, hosts one of the largest breeding colonies for American white pelicans in North America. Gunnison Island is now the only nesting location for American White Pelicans in Utah. Currently, Great Salt Lake Mineral dikes come within approximately four and one half miles of Gunnison Island. The expansion proposal would place dikes as close as within two and one half miles of the island.

Dike construction and maintenance will bring an added anthropogenic influence to the Bay including a dike additional miles closer to the island. These dikes will provide a road access for terrestrial predators to come closer to the island and a travel way to a land bridge to Gunnison Island during low Lake periods. It is necessary to understand what steps are required to ensure that the American white pelicans will continue to nest at Gunnison Island – yet no analysis has been undertaken. For example, particularly at lower Lake levels, predators could take advantage of this diking to access breeding sites such as Gunnison Island. 141.74

Dikes would also increase potential human disturbances such as noise, lighting, and land vibrations. In 1963 during a low Lake event, you could wade to the island from the west side according to DWR reports of human disturbance before the island was protected. During this human intrusion into the colony, many young pelicans we killed. With the close proximity to Gunnison Island, a concentration pond dike may become a roost site for flightless fledgling

pelicans exposing them to land predators. A dike also makes trespass easier for casual or intentional human trespass. A buffer around Gunnison Island designed to protect this area from boats and airplanes and is not sufficient to safeguard the birds from disturbances brought on by permanent structures.	141.74
The proposed expansion has the potential to impact adversely other bird life. There has been no analysis of the impact of development on the eared grebe and other birds that depend upon the North Arm during periods of flood, estimated by the Division to be approximately 10% of the time. In high precipitation years, as fresh water decreases salinity in the North and South Arms, brine shrimp production in the North Arm will exceed that in the South Arm, and birds such as the eared grebe, Wilson's phalaropes and red-necked phalaropes will necessarily rely on the ecosystem of the North Arm. The same may also be true for waterfowl. By the same token, diking and conversion to evaporation ponds will be in place for several decades. Within that time frame, the causeway could be breached or actions taken to better circulate the Lake's waters. Again, the North Arm could become even more important to birds such as the eared grebe. As the proposed 91,000 acre expansion would also dike off about miles of shoreline on the western side of Gunnison Bay, it may adversely impact birds such as the snowy plover. The potential impacts to bird life and other flora and fauna in this area should be fully explored.	141.75
The Corps must analyze the extent to which the planned Mining Company project will impact the substrate of Lake, its wetlands and mudflats and the degree to which changes in substrate will result in the loss of the environmental characteristics and values described in 40 C.F.R. § 230.20(b).	141.76
The Corps must evaluate the "extent and persistence" of any resulting individual and cumulative adverse impacts to the physical and chemical characteristics of the aquatic ecosystem. More specifically, the Corps must determine the negative impacts of the planned project on water "clarity, color, and odor," as well as a reduction in or elimination of the "suitability" of Lake waters for aquatic organisms, recreation and aesthetics. 40 C.F.R. §230.22.	141.77
The Corps must analyze the impact of the planned project on "[l]ocation, structure, and dynamics of aquatic communities; shoreline and substrate erosion and deposition rates; the deposition of suspended particulates; the rate and extent of mixing of dissolved and suspended components of the water body; and water stratification." 40 C.F.R. § 230.23(b).	141.78
The Corps must analyze the impact of the proposed project on changes in salinity patterns, erosion or sedimentation rates, water temperature extremes, and nutrient and dissolved oxygen balance of the aquatic ecosystem. 40 C.F.R. § 230.24(b);	141.79
The Corps must analyze the impact of the proposed project, specifically diking, on salinity gradients, 40 C.F.R. § 230.25, and Corps must thoroughly investigate all likely impacts of the proposed Mining Company project on physical and chemical characteristics of the Lake.	141.80

The Corps must thoroughly investigate all likely impacts of the proposed Mining Company project on biological characteristics of the aquatic ecosystem, and must specifically address:

- Threatened and endangered species. § 230.30; 141.81
- Aquatic organisms in the food web. § 230.31; and,
- Other wildlife. § 230.32.

One specific area of concern is the vast amounts of Potassium that will be removed from the Lake. For that reason, the Corps must analyze what long-term impacts the removal of Potassium could have on Lake algae. Algae is already extensively used by brine shrimp and impacts to that organism would affect both the Lake's brine shrimp industry as well as the birds that are heavily dependent on brine shrimp. 141.82

Because the proposed project would result in about 80,000 acres of permanent adverse impacts to waters of the United States, the Corps must assess not just the impact of Mining Company's new consumptive activities—those associated with the proposed project—but also the individual, cumulative, and indirect impacts of the Mining Company's planned project-related consumptive activities, Mining Company's existing consumptive activities, as well as those of other industrial operators, and other reasonably foreseeable activities, on the Lake's aquatic community. 141.83

The Corps must analyze the impact of the various activities that will result from the planned project on the Lake's aquatic community, including:

- Improvements to the Behrens Trench—excavating the trench wider and deeper or laying pipes in the existing trench;
- Purchasing and transporting SOP from the U.S. Magnesium ponds; 141.84
- Increasing SOP production by constructing an SOP processing plant within the U.S. Magnesium pond area;
- Other activities to support the new expansion.

The Mining Company Proposal is intended to turn more than a substantial quantity of surface acres of relatively intact ecosystem of the Lake into essentially sterile evaporation reservoirs. According to the Corps, "The proposed project would result in approximately 80,000 acres of permanent adverse impacts to waters [of the United States]." Public Notice at 3. This change will be permanent for the foreseeable future and impacts from the evaporation reservoirs may endure forever. Moreover, as many of these reservoirs will concentrate salts for up to three years, the waters in the reservoirs will change over time, becoming more and more inhospitable 141.85

to wildlife. Thus, full consideration must be made of this wholesale transformation of a significant part of Great Salt Lake on a permanent basis as well as over the course of the three year cycle of concentrating salts in the various evaporation ponds. 141.85

Mineral salts extraction changes the chemistry of the waters of Great Salt Lake, at the very least, on a local level. These changes – including the effects of increased concentrations of some minerals and decreased concentrations of others – and the impacts these changes may have on the biota of the Lake have never been analyzed. Changes to water chemistry, both due to current mineral extraction and due to the impacts of increased extraction should be addressed, particularly as these changes impact algae, brine shrimp and water birds. In addition, more salts are extracted from the Lake every year than are added by river inflows; therefore, the long-term extraction of minerals – which is likely to change the chemistry and ultimately the characters of the Lake – should be evaluated. 141.86

The expansion proposal will greatly increase the ongoing shift of minerals between Gunnison Bay and Bear River Bay, and also possibly Gilbert Bay. A full understanding of these possible shifts in minerals and their impacts to the various bays should be developed, including whether the movement of water and minerals could concentrate mercury or selenium in the receiving waters or in the waters from which the minerals and water are being removed. These effects should be quantified and analyzed. 141.87

The Army Corps should consider the impacts of global climate change in its evaluation of this project. In addition to ordinary drought events, long-term climate change is expected to result in smaller snowpacks in the Wasatch Mountains and reduce flows of fresh water to the lake, potentially lowering water levels even below the historic minimum. 141.88

The proposed expansion would result in the diking and conversion of a total 30,000 acres of Bear River Bay into essentially sterile evaporation ponds. Diking and conversion impacts water quality because it will interfere with the natural ebb and flow of the lake, as well as the mixing of the lake's waters. Indeed, the 8,000 acre expansion proposal appears to essentially cut off water flows and access to and from Bear River Bay, particularly when water levels are low, as they currently are. Similarly, flows between Bear River Bay and Willard Spur, which are critical to ecosystem function, will also be disrupted. In addition, as the Division of Wildlife Resources made plain, this area is important at low water levels because it creates a natural lake within the bay. IMC Kalium/DWR Memo, August 28, 1998 at 3. The effects of this expanded development on water quality, together with the effects of current development, will be significant. Specifically, circulation of fresh water, so critical to the Great Salt Lake ecosystem, will be impeded, especially during low water years. Since the open water of Willard Spur is an extremely valuable area for water birds the potential adverse impacts are certain and must be fully explored, based on flow patterns during low as well as high water years. 141.89

"Suspended particulates in the aquatic ecosystem consist of fine-grained mineral particles . . . and organic particles." 40 C.F.R. § 230.21. The discharge of dredged or fill material can result in elevated levels of suspended particulates, at the expense of ecosystem health. 40 C.F.R. 141.90

§ 230.21(b). Therefore, in analyzing the Mining Company Proposal, the Army Corps must evaluate the "extent and persistence" of any resulting individual and cumulative adverse impacts to the physical and chemical characteristics of the aquatic ecosystem – including the increase in suspended particulates that:

- Will exist in the evaporation ponds;
- Results from the introduction of fill material; 141.90
- Is caused by flushing of ponds;
- Is of a consequence of pumping;
- Stems from obstruction of flows; and,
- Otherwise is caused by the planned project.

The Corps must also consider both the past and the future cumulative impacts of the proposed project. These impacts include the past half-century of mineral extraction activity in both the North Arm and Bear River Bay as well as potential future impacts related to urbanization in the counties adjacent to Bear River Bay. Additionally, the Corps should consider possible future impacts on Bear River Bay relative to the Bear River. Such impacts include future nutrient loading in the Bay from the River, as well as the construction of the Bear River Dam. 141.91

G. Cultural Resources

The area of the Lake on which the Mining Company proposes to expand its operations is covered with rich archaeological sites. Specifically, the area north of the existing Mining Company reservoirs contains archaeological sites on which eleven human burials were recovered in 2001. This area has yielded remains dating back to the Late Prehistoric period (post-A.D. 1300). The age of the recovered remains is directly related to the living tribes of northern Utah—specifically the Northwestern Band of the Shoshone Nation. Given that any ground disturbance in the areas bordering the existing Mining Company reservoirs in Bear River Bay will likely encounter abundant cultural resources significant for their scientific value and significant to the heritage and religious values of living Native American peoples, the Corps must make a concerted effort to seek input from the State's Native American peoples in order to make certain that the EIS includes adequate analysis of the impact of the proposed projects on cultural resources. So that the Terms of Reference (TORs) for the EIS include and adequately cover issues important and relevant to Native Americans and their cultural resources, their full and effective participation in the scoping process is critical. 141.92

The Corps must also analyze the impact of the proposed GSLM expansion on cultural resources, especially on the east side of the Lake, considered one of the richest archaeological landscapes in Utah. The Corps should note that increased access to the archaeological areas of Clyman Bay caused by the proposed expansion, may increase human use and significantly and adversely impact cultural resources. 141.93

The Corps should evaluate the effects of eliminating such a significant percentage of the shoreline, especially on the eastside of the Lake, on cultural resources. The areas immediately east and northeast of the existing Mining Company reservoirs are rich in cultural artifacts and may suffer unnecessary exposure to human exploitation as a result of shoreline loss 141.94

H. Extreme vs. Average Conditions

Because the surface area, volume and salinity of Great Salt Lake vary considerably, these variable conditions have significant impact on wildlife and recreation. Because of these variations, wildlife, including birds, and wildlife habitat are more vulnerable to, and their viability and health more influenced by, extreme rather than by average conditions. Therefore, the Army Corps must base its analysis of the GSL Minerals Proposal **not** on average conditions, regardless of the averaging period, but on some measure of extreme conditions.

For example, predator access is increased in low water years, the importance of the North Arm to eared grebes is increased in high water years and impediments to water flows and recreation are increased in low water years. Therefore, the only way that the Army Corps can access the impacts of the planned project is to consider its impacts in high water and in low water years. At a minimum, the Army Corps must undertake all its analysis and decisionmaking relative to the proposed project based on **each** of water levels representing the following elevations: 4211.85 feet (representing two historic periods of high water), 4191.3 feet (representing two historic periods of low water), and the mean average elevation of 4202 feet above sea level.[10] 141.95

I. Air Quality

The Corps must evaluate whether the air quality around the proposed project areas will likely be adversely impacted with the approval of the application. These air quality impacts will be present both during construction and on an ongoing basis due to the drawdown of the Lake levels that result from this expansion. During the course of constructing this project, large volumes of sediment will be moved around the shore of the lake with significant impacts on air quality, including areas that are not currently in compliance with the National Ambient Air Quality Standards (NAAQS) for fine particulate matter and ground level ozone. The Corps should evaluate the effect of dry evaporation reservoirs as an area source of air pollutants, and the potential effect of those emissions on attainment of NAAQS in Salt Lake, Davis, Weber, Box Elder, and Cache Counties. The Corps should also evaluate whether expanded operations will 141.96

[10] See: http://ut.water.usgs.gov/gslelevgraphs/GSL.WSAlt.Aug07.pdf.

increase other sources of air pollution at or associated with the facility, and whether that would affect the region's ability to attain and maintain the NAAQS. 141.96

The Corps must evaluate the likelihood that dust from the exposed lakebed would have negative health impacts to humans and wildlife. The Utah Division of Air Quality conducted a 2 year study in 2005 and 2006 of wind-blown dust particles from the exposed Great Salt Lake shoreline. After six consecutive years of drought left nearly 70,000 acres of exposed shoreline, Dr. Dianne Nielson, Executive Director of UDEQ, stated "there is a lot of chemistry in the lake that we don't have a good handle on."[11]

The issue of blowing dust from a dry saline lakebed was the subject of a 2008 article in High Country News about the Salton Sea, in which impacts to humans, wildlife, and agriculture were considered if the Salton Sea was allowed to dry up without treatment.[12] In addition to the significant loss of wetlands along the Pacific Flyway used by millions of birds, a study conducted by the Pacific Institute concluded that if the Salton Sea were allowed to dry without treatment, it would generate 17 tons of unhealthy dust a day and that winds pebbled with salty sand would sicken asthmatics, children and the elderly. 141.97

A further study of like conditions noted that increased exposure of the lakebed of the Aral Sea, due to depletion of its tributaries, has caused major dust events that have had a significant, negative impact on agriculture, domestic animals and humans.[13] Given these studies and the acknowledgement that the dust from the lakebed contains a toxic mix of pollutants, it is imperative that an analysis be performed on the effects of a further, artificial drawdown of the lake level in the North Arm. This is especially important given the fact that Weber County as a non-compliance area for air quality.

Finally, USGS studies have shown high levels of contaminants in the sediment of the lake. *See* Reconstructing Historical Changes in the Environmental Health of Watershed by Using Sediment Cores from Lakes and Reservoirs in Salt Lake Valley, Utah (December 2000). As water levels are reduced and lake bed exposed and dried, contaminants that were once contained under water will become airborne and adversely impact the air quality.

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[11] Utah Division of Environmental Quality, Air Study Give Insight of Dust from Great Salt Lake, DEQ Newsletter (May 2006), available at: http://www.deq.utah.gov/Newsletter/2006/May/AirStudy.htm (please note: if the reader experiences difficulty obtaining this document, FRIENDS will provide either a hard or an electronic copy of this article).

[12] See *Terry Greene Sterling,* The People of the Sea: California's Salton Sea could dry up and die, or be fixed and developed. Either way, its renegades, recluses, ruffians and retirees will lose*, HIGH COUNTRY NEWS, March 3, 2008.* Exhibit 7, attached.

[13] *See* Philip Micklin, The Aral Sea Disaster, Annual Review of Earth Planet Science 35:47-72 (2007) (finding that the population downwind from dust/salt storms of the dry lakebed have been negatively impacted). Exhibit 8, attached.

J. Seismic Concerns

Five submerged segments of the Great Salt Lake fault system have generated magnitude 6.8 - 7.2 earthquakes in the past and will do so in the future. At least four of these, the Rozelle, Promontory, Fremont, and Carrington segments, directly threaten the proposed industrial expansion to the northwest arm of the lake. Ground-shaking accelerations as great as 1.0 g and tsunami waves as high as three to four meters generated by sublacustrine fault ruptures could cause catastrophic oil and gas spills into the lake from pumping facilities, pipelines, and supply trucks supporting both proposed and existing evaporation ponds. Such spills could reasonably be expected to destroy bird, brine shrimp, and brine fly habitats lake-wide in a single event. No consideration of this potential disaster scenario has been addressed to date. 141.98

K. Conservation Pool

The Corps should consider whether a Conservation Pool should be implemented in recognition of the effects of Mining Company's Proposal on Lake levels, as those levels relate to navigation, the public interest and the Public Trust Doctrine. 141.99

L. Wildlife

The Corps must analyze how impacts to the Lake's ecosystem including changes in Lake elevations due to water usage for the evaporation ponds, will affect the Lake's wildlife, 141.100
especially birds. The Corps must also analyze how impacts to other key ecosystems, besides the 141.101
Lake, will affect most of the Lake's wildlife, especially the birds. Finally, the Corps should
evaluate the loss of submerged aquatic vegetation as a source of food and as habitat for resident 141.102
and migratory birds.

M. General

The following general comments are offered for consideration:

- The Corps must take a species-specific approach to habitat availability and loss. 141.103
- The Corps must base its analysis on current maps—those that depict all existing dike structures throughout the Lake—of the Lake. 141.104
- The Corps must base its analysis on up-to-date information of the existing condition of the Lake. 141.105
- The Corps' cumulative analysis must be based a pre-determined geographical area. 141.106
- The Corps must determine why the Mining Company's stated purpose is so narrowly and unreasonably defined. Why can't Mining Company seek to maintain its economic 141.107

viability and market share through means other than using existing GSL resources? Why can't Mining Company use traditional business approaches to economic viability, such as technological innovation? 141.107

- The Corps must determine how the royalty monies paid by companies exploiting the Lake's resources is utilized by the State of Utah. Is any of the money allocated to the regular maintenance of the Lake's geology? If there is a statutory mandate, is the State of Utah meeting its obligations under that mandate? 141.108

- The Corps must determine whether the State of Utah has developed and adopted a regular program for auditing the Lake's resources and designing systems for sustainable management of those resources. 141.109

- The Corps should determine the impact of invasive *phragmites australis* on the Lake's hydrology, flow and navigational access? This determination should include: 141.110
  - What is the water consumption of phragmites?
  - What impact does phragmite expansion have on the Lake's ecosystem?
  - What is the most effective way to rid the Lake of phragmites?

- The Corps should thoroughly address the following:
  - Why is deepening of existing reservoirs not a viable alternative to expansion? 141.111
  - Why is the Corps not considering all associated permits? For example, why are associated air quality permits not being considered? 141.112
  - What water quality permits does the Mining Company currently have? 141.113
  - What happens to the flushing of waste material if the lake-bed is dry? 141.114

- Analysis of Lake levels and resulting impacts must consider the potential effects of climate change Lake levels, especially if the combined effect of climate change and additional evaporation will further reduce Lake levels. 141.115

- The analysis should address the cumulative habitat loss from the proposed, existing, and reasonably foreseeable future lake development, including the cumulative impacts of all diking and other changes to the Lake's hydrology, flow, and navigational access. 141.116

- The Corps should evaluate the habitat and other effects of completely surrounding Dolphin Island with solar evaporation reservoirs. 141.117

- In evaluating the feasibility of the Mining Company proposal for expansion, an important question must be asked: Whose *sustainability* should matter? That of the Great Salt Lake or that of the Great Salt Lake Minerals Corporation? In evaluating 141.118

the proposal, the appropriate foundation for analysis is the sustainability of the waters of the United States (a public resource) and not that of the Mining Company (a private company).	141.118
• While Mining Company is pushing "job creation" as an important reason for why it should be granted the permit to expand, it is important to recognize that the more appropriate measure of the value of business/industrial activities that involve external costs (e.g., pollution) is *net economic impact*, not job creation. Hence, what is the net economic impact of the proposed expansion on the State of Utah? Will the expansion result in the people of Utah subsidizing (through increased pollution—water, air and land, and overexploitation (i.e., non-sustainable exploitation) of their environmental resources) global consumers of potassium sulfate?	141.119
• What is the economic value of the Mining Company's existing operations, as well as the potential value of its proposed expansion, on the economy of Utah?	141.120
• The Corps' analysis must include a thorough and independent consideration of all less damaging practicable alternatives to the proposed project, including those that do not involve discharge into the waters of the United States and do not involve special aquatic sites.	141.121
• The Corps' analysis must consider the possibility that the Mining Company will not remain economically viable either because of the lack of Lake water, the diminution of the limited amount of potassium in Lake waters below a viable threshold, or unaccounted for changes in the economic structure of the company. Because such an event could occur, the Corps' environmental analysis must account for such a possibility as part of its analysis and must put forth a contingency that addresses how reclamation of the evaporation reservoirs and other aspects of Mining Company's operations would occur.	141.122

V. Conclusion

Thank you for your full consideration of the critical points we raise in these comments. Please do not hesitate to contact me with any questions or concerns regarding the issues we raise herein. Moreover, if you have any difficulty gaining access to any of the materials we cite, please let me know and I will provide them for you. Also, we will send you, via U.S. Mail, a hard copy of these comments with all Exhibits.

Because FRIENDS' comments related to Utah's Department of Water Quality's water quality certification of Mining Company's Proposal under § 401 of the Clean Water Act supplements the scoping comments presented here, Friends' includes those comments, attached as Exhibit 9, by reference.

Thank you for all you do to protect the waters of the United States and the aquatic communities, recreation and aesthetic values that depend upon them. Please keep us informed as to any further opportunity for public participation relative to the Mining Company Proposal and please send or email us all relevant documents and other materials. We also request that public hearings be held at every opportunity while you consider the planned project and that we receive notice of these hearings.

Yours,

Rob Dubuc
ATTORNEY FOR FRIENDS

State of Utah

JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

Office of the Governor
PUBLIC LANDS POLICY COORDINATION

LYNN H. STEVENS
Public Lands Policy Coordinator

RESOURCE DEVELOPMENT COORDINATING COMMITTEE
Public Lands Section

April 28, 2007

Dave Grierson
Division of Forestry, Fire and State Lands
1594 West North Temple
Suite 3520
Salt Lake City, Utah 84116

SUBJECT: Mineral lease, near Clyman Bay, Great Salt Lake
Project No. 07-7820

Dear Mr. Grierson:

The Resource Development Coordinating Committee (RDCC) has reviewed this mineral lease nomination for the Clyman Bay area of the north arm of the Great Salt Lake (GSL). The approximately 23,000 acres proposed for leasing contain shoreline playa and mudflat wetlands, along with waters of the Great Salt Lake. The intent of the mineral lease nomination is to create solar evaporation ponds for the concentration of brines and commercial production of potassium fertilizer. Upon approval, several miles of dikes will be installed, along with water "feeder" channels and pump stations.

In light of your public trust responsibility in managing the resources of the Great Salt Lake on behalf of the State of Utah, this office recommends that you take into full account the following agency and public comments regarding the project in deciding your course of action.

The Utah Division of Wildlife Resources (UDWR) comments:

Potential impacts to Gunnison Island nesting birds.

- The construction process and proximity of the lease to Gunnison Island may disrupt nesting American White Pelicans, California gulls, and peregrine falcons. Currently there is a one (1) mile buffer surrounding the island to minimize disturbance. This buffer was intended to provide security for the nesting birds on the island from boats or airplanes. However, it does not take into account permanent structures, such as dikes or oil rig platforms that may increase the likelihood of disrupting nesting colonial species. The current dikes in Clyman Bay are approximately 4 miles away from the island and the proposed dikes would be only 2 miles away. The proximity of newly constructed dikes may provide predators, as well as human trespassers, easier access to Gunnison Island. Pelicans are known to be highly susceptible to any disturbance and will, at times, totally abandon nesting sites. Pelicans completely abandoned Hat Island (in the South Arm of the GSL) in the 1960's due to human disturbances. Gunnison Island is the third largest breeding colony for American White Pelicans in North America. The security and

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protection of this habitat is thus imperative to this known nesting site.

- Juvenile pelicans may confuse the proposed ponds with a potential forage site and become weakened and trapped within them until they succumb to the elements. This has occurred at the U.S. Mag site which is much farther away along the south shore of the GSL.
- The constructed dikes may also provide breeding areas for California gulls that could increase gull predation on pelicans.

Potential impacts to other wildlife.

- Constructed dikes and filling of ponds may eliminate springs within the leased area that provide critical wildlife water sources and potential nesting habitat for snowy plovers, a state sensitive species.
- Because insufficient data exists, it is unknown whether the presence of permanent ponds on the western shoreline of the GSL may impact other wildlife species, such as small mammals and raptors. We recommend surveys be conducted to assess the bird and mammal populations present in Clyman Bay.
- Construction of a pond within a few miles of Dolphin Island may also affect nesting waterbird species such as double-crested cormorant, gulls, great blue herons and Caspian terns.

Potential impacts to North Arm salinity, habitat and ecology.

The GSL is of hemispheric importance to migratory waterbirds (waterfowl, shorebirds and wading birds), as many species use the GSL as nesting, feeding and staging areas. At times, millions of birds may be found on the GSL and the surrounding wetland/upland habitat complexes. Since the GSL is a dynamic system, with the lake elevation changing seasonally and annually, the abundance and location of habitats continually change over time. These changes create a continual diversity and continuity of available habitats, such that wildlife will move around the GSL to find those habitats that supply their needs. It is because of these habitats that the GSL has become critically important to wildlife, with the Lake sometimes supporting over 50% of the worldwide populations of some avian species.

When trying to understand wildlife populations on the GSL, the lake waters and habitats within and surrounding the lake must be evaluated in the context of the current lake elevation, along with an understanding of the ever-changing water elevations and precipitation events. Avian use of the GSL waters and habitats can shift greatly with subtle changes in lake elevation because of the low gradient bottom. The presence of the evaporation ponds would eliminate a large portion of mudflat and shoreline habitat during these shifts in lake ecology. Salinity in the North Arm changed substantially as recently as the high water years of the 1980s and early 1990s. During this time, the entire lake's ecology and available habitats changed dramatically:

- Eared grebes (1-3million) shifted their staging pattern from the South Arm to the North Arm.
- Commercial brine shrimp harvesters harvested in the North Arm instead of the South Arm to follow the shift in the brine shrimp population from the South Arm to the North Arm.
- Brine fly populations shifted to the North Arm.
- Shorebirds and other wildlife shifted/expanded their ranges to the North Arm.
- Brine flies are the predominant food item for most migratory shorebirds that visit the lake. During their life cycle, they must anchor to bioherms or stromatolites that form on the lake floor. These calcium carbonate structures appear to be essential to the reproductive life cycle of brine flies and are important to the brine shrimp population. At certain times of the year, brine shrimp sustain themselves by feeding on or near these productive structures. The structures are also

essential to what is possibly the largest inland U.S. concentration of wintering Common Goldeneye. The creation of the causeway increased north arm salinity which made these bioherms unavailable to brine flies. However, when the GSL elevation increases and the salinity is less within the north arm, these structures are again available for use by brine flies. Bioherms are only found in a few areas of the GSL and they have been found within the area of the proposed lease in Clyman Bay. This area of Clyman Bay, if diked as an evaporation pond, will lose its bioherm structures.

Due to the known recent ecological shifts in the GSL, the extensive wildlife concerns associated with the diking of 23,000 acres of Clyman Bay and the associated 8,000 acre diking planned for Bear River Bay, UDWR recommends that greater site-specific analysis and survey data be completed prior to leasing. One source for such information may be the EIS currently being developed regarding the proposed expansion project that will generate site specific analysis and information regarding potential impacts to wildlife, wetlands, water quality and GSL ecology. Evaluating this site specific information is one approach to assist you in assessing the public trust resources of the GSL.

We appreciate the opportunity to comment on this proposal and we look forward to working with the Division of Forestry, Fire and State Lands and the federal natural resource agencies in the future to protect the public trust resources on the Great Salt Lake.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Resource Development Coordinating Committee, Public Lands Section, at the above address or call the Director, Jonathan G. Jemming at (801) 537-9023 or Carolyn Wright at (801) 537-9230. Attached are comments received from Western Resource Advocates and from the lease applicant, Great Salt Lake Minerals.

Sincerely,

for JH

John Harja
Assistant Director
For Policy and Planning

/attachment

United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

RECEIVED
MAY 14 2007

In Reply Refer To
FWS/R6
ES/UT
7-FA-0186

May 1, 2007

Resource Development Coordinating Committee
Governor's Office of Planning and Budget
5110 State Office Building
Salt Lake City, Utah 84114

RE: Mineral Lease, near Clyman Bay (Gunnison Bay), Great Salt Lake

Dear Resource Development Coordinating Committee Members:

The U.S. Fish and Wildlife Service (USFWS) has reviewed your notice describing the Great Salt Lake Minerals Potassium Sulfate Expansion Project (Project) and its associated lease nomination. The nomination received by Division of Forestry, Fire, and State Lands (Division) and now being reviewed by the Resource Development Coordinating Committee (RDCC) requests the lease of 23,088 acres in the bed of the north arm (Gunnison Bay) of the Great Salt Lake (GSL). GSL Minerals' intent of leasing this land is to expand its solar evaporation operations for mineral extraction of brines from lake waters. The proposal involves the construction of dikes, feed channels, and pump stations similar to operations GSL Minerals currently has in Clyman Bay and in Bear River Bay. The Division and RDCC are currently seeking comments and stipulations appropriate for leasing this area.

The USFWS has been participating in development and review of the Project since December 2006 when an environmental permitting meeting and field trip was held with personnel from US Army Corps of Engineers (Corps), Utah Division of Wildlife Resources (UDWR), GSL Minerals and their consultant, BIO-WEST, Inc. During the meetings and field trip the USFWS discussed the resource issues and concerns that we believe need to be addressed in the environmental reviews for the Project. Based on our earlier comments and our review of the subject notice, we provide the following response for your consideration. Our comments are made pursuant to our authorities under the Endangered Species Act of 1973, as amended, the Migratory Bird Treaty Act, the Clean Water Act, and the Bald and Golden Eagle Protection Act. These comments reflect the potential for environmental impacts resulting from issuance of a new lease and future Project operations.

As you are aware, the lease request in Clyman Bay of 23,088 acres is part of a larger project that

proposes to add an additional 8,000 acres of evaporation ponds in Bear River Bay. Due to permitting requirements under the Clean Water Act, GSL Minerals has been working with the Corps and UDWR to assess effects of this expansion and to determine what mitigation may be necessary, if any. BIO-WEST, Inc. is currently assessing fish and wildlife data that are currently available via state and federal agencies, and they are also conducting bird use surveys from the shores of Clyman and Gunnison bays and by helicopter for Bear River Bay. Existing and new fish and wildlife use data will be analyzed in a NEPA document that will likely cover the entire project. Hence, a substantial amount of biological information will be compiled to assess the effects of the proposed Project. Because the evaporation pond expansion in Clyman, Gunnison, and Bear River bays has been designed and originally presented as a single project, USFWS requests that the entire Project be evaluated by RDCC and the Division to determine its effects on the GSL ecosystem prior to a lease being granted. The remainder of this correspondence details the resource areas that should be included in an evaluation.

Water Quality

During preliminary project meeting discussions, GSL Minerals agreed to conduct some limited water quality sampling to obtain information regarding the status of their current discharges to Bear River Bay. We have reviewed these data as presented in the Water Quality Monitoring Report for GSL Minerals (four page report from BIO-WEST, Inc.) and have the following comments. First, we appreciate GSL Minerals' efforts to collect and analyze water for mercury and selenium, which are two elements of concern for the GSL. Both mercury and selenium bioaccumulate in living organisms at much higher concentrations than measured in water, and results from recent scientific studies suggest elevated concentrations of mercury are present in GSL and may be taken up by waterfowl and other birds. Also, the State of Utah is developing a numeric water quality standard for selenium for the GSL. The concern with the flushing of brines from GSL Minerals' solar ponds is that mercury and selenium may be concentrated in the remaining brines and flushed back to Bear River Bay and GSL in a plume. Due to their interactions in the environment, these elements are readily incorporated and efficiently recycled in the food web so even a short-term pulse will have lasting affects. Based on the available data collected by BIO-WEST, Inc, selenium concentrations in water were below the freshwater water quality standard of 5 parts per billion; however, the detection limit for mercury (0.2 ppb) was sixteen times higher than the freshwater water quality standard of 0.012 ppb. Recent USGS sampling has found mercury in the South Arm to be as high as 0.1 ppb which is considered elevated, yet it is still half the detection limit here. Based on these observations, our recommendations for additional pre-lease sampling and long term monitoring include: 1) lowering the detection limit for mercury to the freshwater water quality standard of 0.012 ppb; 2) collecting samples within the first few days of flushing rather than the last few days; and 3) sampling effluent from ponds in Gunnison Bay if they are flushed. If unacceptably high levels of contaminants are detected, lease stipulation should specify avoidance, minimization, and mitigation measures with additional monitoring.

More salts are removed annually from the Great Salt Lake than are added by inflows and natural processes. Furthermore, some salts are harvested disproportionately to their concentration in the

lake and to their ability to be replenished. We recommend the long-term effects of this proposed Project, in conjunction with existing mineral operations throughout the lake (i.e., cumulative effects), be evaluated to assess the impact on salt concentrations and proportions of minerals in the lake and how changes in these might affect the lake and its biotic community (e.g., algae, brine shrimp, brine flies, and birds).

As we understand the proposed Project, flushing of the northern-most expanded solar evaporation ponds in Bear River Bay would occur directly into Bear River Bay near the Willard Spur. This would likely increase the salinity within the Bay and may adversely affect macrophytes, invertebrates and fish, and indirectly affect waterfowl and piscivorous birds by decreasing food availability. We recommend that prior to granting any new lease, the impact of adding these brines on the water quality in the Bay be modeled. The model should evaluate a range of scenarios with an emphasis on average and less than average runoff years and also evaluate the effects during multiple successive years of drought.

Migratory Birds

The Great Salt Lake provides a robust habitat for migratory birds that is unique in the intermountain area. Site specific data for avian usage of Gunnison Bay is fairly limited aside from information regarding the American white pelican and other birds that nest on the bay's islands (Dolphin, Cub, and Gunnison). The limited information that does exist indicates that Clyman Bay and the western shore of Gunnison Bay have the potential to provide foraging and nesting habitat for shorebirds including the snowy plover and the American avocet. In addition, Gunnison Island is one of the premier breeding colonies for American white pelican in North America. Because of this, in 1977 the Utah State Legislature passed the Pelican Management Act which directs the protection and management of GSL pelican populations and provides for the protection of Gunnison Island specifically for pelicans. Any environmental analysis should consider impacts to the breeding colony of pelicans on Gunnison Island and to other shorebirds along the shoreline and at springs and wetlands within Clyman and Gunnison bays. Furthermore, if lake levels rise like they did in the mid-1980's, the south arm of the GSL may become too fresh to support large populations of brine shrimp; subsequently, salinities in the north arm may decline to levels that would support large numbers of brine shrimp which would attract large numbers of birds. The analysis of evaporation pond expansion in Clyman and Gunnison bays should consider how migratory birds would be affected under this scenario.

Bear River Bay is highly important to waterbirds. The area is used by Canada geese for molting with more than 10,000 counted during some years in the late 1990's. The Bay provides aquatic habitat for a fishery similar to that of the Bear River and thus provides forage for several species of picivorous birds. The area is also important foraging and resting habitat for other waterfowl due to the fresh water, aquatic macrophytes, and other aquatic biota that exist in the bay.

Any lease granted for evaporation pond expansion should be based on an analysis that specifically evaluates Project effects to all migratory bird species, including those listed above. The analysis should provide a plan for long term monitoring of avian resources relative to

potential project impacts as well as a mitigation plan for potential project impacts to migratory birds. For example, it should evaluate noise and visual effects from project activities, habitat reduction and fragmentation, and whether habitat enhancement efforts may minimize displacement impacts for some species. Habitat impacts for species on the Service's 2002 list of Birds of Conservation Concern (BCC) and Partners in Flight Priority Species should be evaluated as part of the analysis. The BCC List identifies those migratory and non-migratory avian species that, without additional conservation actions, are likely to become candidates for listing under the ESA. To help meet responsibilities under Executive Order 13186, lease stipulation should include provisions which: recommend ground-disturbing activities occur outside critical breeding seasons for migratory birds; minimize temporary and long-term habitat losses; and require mitigation for unavoidable habitat losses, particularly at the field development stage. Mitigation should include the option for offsite, in-kind habitat compensation.

Habitat Fragmentation and Disturbance

The analysis should identify the amount, location, and timeframe of temporary disturbance as well as permanent facilities that could result from the proposed action. Displacement of wildlife across a large area during critical times, such as breeding, could prove a significant impact. If wildlife are displaced, it is likely that the area to which they move is inhabited by other wildlife or disturbed by other ongoing activities. Depending on the season and species, displacement could lead to nest abandonment, inter- and intra-specific competition, reproductive failure, and possible mortality. American white pelican are known to be highly susceptible to human related disturbance. In addition, the cumulative effects of other projects in the area may limit the availability of alternative sites for displaced wildlife.

Aquatic Habitat

Because the Great Salt Lake and the Bear River Bay inflow area contain significant wetlands and littoral and riparian areas, we recommend lease stipulations be developed to avoid any wetland losses in accordance with Section 404 of the Clean Water Act, Executive Order 11990 (wetland protection) and Executive Order 11988 (floodplain management) as well as the goal of "no net loss of wetlands." Riparian and littoral areas are some of the most productive wildlife habitat types in North America. Riparian and littoral vegetation plays an important role in protecting streams and lakes, reducing erosion and sedimentation as well as improving water quality, maintaining the water table, controlling flooding, and providing shade and cover. In view of their importance and relative scarcity, impacts to riparian and littoral areas should be avoided. Unavoidable impacts should be fully mitigated.

Any lease granted for evaporation pond expansion should be based on an analysis of the effects to fish and wildlife and their habitat which result from Project development and current mineral extraction activities on the lake including the operations of GSL Minerals Corporation and other operations such as US Magnesium and Morton Salt, etc. In particular this analysis should be done relative to impacts on algae and brine shrimp lakewide, and for aquatic macrophytes, fish and other aquatic biota in Bear River Bay.

Cumulative Impacts

The combined, incremental effects of human activity, referred to as cumulative impacts, have the potential to pose a serious threat to the GSL environment. While they may be insignificant individually, cumulative impacts accumulate over time and space, from one or more sources, and can result in the degradation of important resources. Because of this, cumulative impacts analysis should be done prior to any lease being granted. The cumulative impacts discussion should, at a minimum, include evaluations within the region of influence of the proposal for: potential for additional fish and wildlife impacts due to energy development including oil and gas in the GSL; impacts from increased habitat fragmentation; displacement of wildlife; and cumulative effects of lake level changes on project affected resources.

Conclusion

Based on the proceeding information, USFWS requests that the Clyman Bay lease be held in abeyance until RDCC and the Division can collect information necessary to properly analyze the effects of expanding GSL Minerals' evaporation ponds as well as how long-term operations in Clyman, Gunnison, and Bear River bays would affect fish and wildlife and their habitat.

Once full Project analysis has been completed, lease stipulations should include a declaration of baseline environmental conditions for fish and wildlife and their habitat including bird usage and aquatic biota present in Clyman, Gunnison, and Bear River Bays. Lease stipulations should further specify a monitoring plan that will assess short-term and long-term impacts associated with evaporation pond expansion and GSL Minerals operations. The monitoring plan should include impact thresholds that trigger corresponding mitigation measures. For example, impact thresholds may include a decrease in the nesting population of American white pelicans in Gunnison Bay or a decrease in the molting populations of Canada geese in Bear River Bay. Examples of corresponding mitigation measures include removal of nearby dikes, a reduction in operational activities during specific times of the year, and/or a change in flushing water discharge points (i.e. from Bear River Bay to the vicinity of Ogden Bay).

We appreciate the opportunity to provide these comments. In the future, as this project progresses, USFWS would appreciate information on upcoming field visits and interagency coordination. If you need further assistance, please contact Paul Abate, Ecologist, or Nathan Darnall, Ecologist (Environmental Contaminants) at the letterhead address or (801) 975-3330 ext. 130 or 137, respectively.

Sincerely,

Larry Crist
Utah Field Supervisor

cc: Dave Grierson
Sovereign Lands Coordinator
Division of Forestry, Fire & State Lands
1594 West North Temple, Suite 3520
Salt Lake City, Utah 84116-3154

July 19, 2007

Michael R. Styler
Executive Director
Department of Natural Resources
1594 West North Temple, Suite 2110
Salt Lake City, Utah 84114-6301

Richard J. Buehler
Director and State Forester
Division of Forestry, Fire & State Lands
1594 West North Temple, Suite 3520
Salt Lake City, Utah 84116-3154, and

Dear Mr. Styler and Mr. Buehler:

I would like to thank you for considering this input to the weighty decision that needs to be made concerning the public trust and intrinsic values of the Great Salt Lake Ecosystem (GSL), especially the importance of the Gunnison Bay (North Arm). There are few places near or around the GSL with the quality of views and vistas, a commodity now absent in a vast number of North American landscapes, but my main concern is the need to protect and preserve Gunnison Bay as an important aquatic bird habitat.

To help validate the following observations and data it is important to state my background and experience with this aquatic system. I have worked on the GSL and researched the birds associated with it for almost 40 years. I was employed with the Utah Division of Wildlife Resources from 1968 to 2002, and currently serve as the Great Basin Bird Conservation Region Coordinator where I work with biologists that are responsible for the major salt water bird habitats in Western North America.

As part of my Utah Division of Wildlife Resource responsibilities I had oversight of two of large islands of the Great Salt Lake that are important to colonial birds. This included Gunnison Island in Gunnison Bay which is occupied by large numbers of breeding American White Pelicans and California Gulls. I was responsible for the monitoring of these populations including the collection of 20 years of breeding pelican data and for habitat protection.

Most of the information that I wish to present reflects the significance of the Gunnison Island complex in context of the North American range-wide American White Pelican conservation. In addition to presenting this pelican information I would also like to emphasize the importance of the open water and shoreline portions of Gunnison Bay to several other hemispherically important aquatic bird species that occur at the Great Salt Lake seasonally.

During periods when the GSL elevation occurs between 4193' and 4206' above sea level (asl), there are several aquatic bird species that occur at the lake in continental and hemispheric numbers of importance at the GSL and largely in the Gilbert Bay. These are the Wilson's Phalarope, Red-necked Phalarope, and the Eared Grebe. Some years these populations are in excess of 1,200,000, and 1,300,000 respectively during their seasonal occurrence at the GSL. At times these numbers of Wilson's Phalaropes and Eared Grebes represent 50 to 70% of the population that occur in the world.

During the infrequent periods when the GSL elevation occurs in excess of 4208' asl, Gunnison Bay becomes the primary foraging and resource area for these birds. During this period of mineral dilution within Gilbert Bay brines, the brine shrimp and brine fly populations diminish as the lake ecology shifts from saline to freshwater, dropping out the important brine shrimp and brine fly food resource that these birds rely on. At this point of diminishing aquatic food resources in Gilbert Bay the salinities in Gunnison Bay reach optimum condition for brine shrimp and brine fly production.

This was the case in the high lake years of the 1980s (1983 to 1988). The migratory populations of Phalaropes and Eared Grebes were totally reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations which sometimes exceeds 2,000 miles. Much of the foraging of these species took place along the west shorelines of promontory point, around Gunnison Island and west toward the Hogup Mountains (the ostensible GSL Minerals diking and ponding site), (DWR SLO files).

During a 1989-1991 range-wide Snowy Plover survey in the Western States, Utah was asked to provide information on numbers and breeding population locations at the GSL. Subsequently Ph.D. graduate student, Peter Paton and his graduate associates continued lake surveys for Snowy Plover into the mid-1990s. These surveys located significant Snowy Plover populations within the shoreline complexes of Gunnison Bay. The largest concentration was in the northern portions of the system including Locomotive Springs WMA. Other populations were found around fresh water seeps on the west shoreline of Gunnison Bay. (DWR NRO files, Paton 1995).

The National Shorebird Conservation Plan and the Intermountain West Shorebird Conservation Plan ranked the Snowy Plover as a high priority species for conservation. The Intermountain West Plan lists it as one of the five highest priority species due to the West's important contribution to the conservation of the species in North America. The Pacific Coast population of Snowy Plovers is listed as threatened. The north expansion of the solar evaporation ponds complex along the west shoreline of Gunnison Bay will impact some historic nest sites and may impact breeding pairs that are using or will use the area during appropriate habitat conditions.

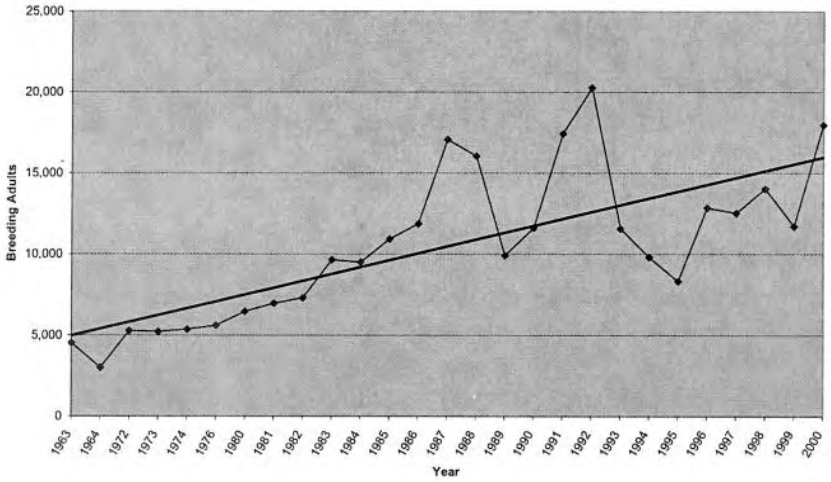
There are at least two historically active Golden Eagle nesting territories near or associated with the intended salt pond expansion. One occurred in the Fingerpoint-Hogup Ridge complex. They were active into the late 1980s and early 1990s. I have not checked them in some time. If they are still active or even if they where not active this year, then the USFWS may need to be involved relative to the National Eagle Act or the Migratory Bird Species Act.

Gunnison Island has and currently supports significant populations of breeding American White Pelicans, California Gulls and a pair of Peregrine Falcons. This island has been a known active colonial bird nesting site since its discovery by Howard Stansbury in 1850. Since his historic Great Salt Lake survey, there have been numerous reports of the continued use of Gunnison Island by nesting pelicans and gulls.

In 1979 a systematic breeding pelican survey was initiated. Since that time, there has been some seasonal variation in breeding numbers at Gunnison but the trend line has demonstrated an increase in the number of breeding adults and subsequent nests over 20 plus years of survey.

During the last 60 to 70 years, many American White Pelican colonies in North America have been inventoried for numbers of breeding adults, nests and fledging young. The Gunnison Island population in Utah has consistently ranked among the top three largest American White Pelican colonies in North America. Available data for the year 1998 to 2001 for colonies in North America indicate that the population of Gunnison Island ranked number two. Chase Lake, North Dakota had the highest number of nests (14,900) and was the largest single breeding colony in North America. Chase Lake was followed in abundance by Gunnison Island , Utah with 8000 nests (Figure 1).

Figure 1. 1963-2000 Gunnison Islnad White Pelican Breeding Adult Population Plotted With Trendline



More than 29,000 breeding pelicans nested at Chase Lake National Wildlife Refuge in Medina, North Dakota in 2003, hatching an estimated 14,500 chicks. Then, in June of 2004, over the course of a week and a half, the Chase Lake pelicans, the largest breeding colony of American White Pelicans in the world, abruptly and prematurely abandoned their nests, leaving eggs and chicks behind. An estimated 27,000-30,000 breeding birds fled. Not one chick survived. An aerial survey conducted in late May 2005 the next year, estimated 18,850 breeding adults had returned. This was back to the estimated breeding population of 1997, but still scientists have not been able to identify the reason for the June 2004 exodus. One idea based on behavior and chemical uses in the area is that an agricultural pesticide may have been involved. Regardless of the cause of failure the Chase Lake colony is vulnerable.

One of the most significant values of Gunnison Island is its secure location sequestered in the middle of Gunnison Bay remote from human intrusion and terrestrial predation. It is most likely the most secure nesting site for American White Pelicans and California Gulls in western North America.

The Utah State Legislature in cooperation with the concerned public helped secure Gunnison Island and Hat Island as wildlife preserves through a process of condemnation and acquisition in the 1970s. This investment by the people of the State of Utah, in good faith that these colonial nesting sites would be protected in perpetuity, is a significant contribution and commitment of public trust.

The Division of Wildlife Resources and its Wildlife Board have taken their stewardship of these colonies seriously through establishing protection to the sites via the wildlife code. Biologists and wildlife managers have also invested time and resources toward the conservation and management of these important GSL bird habitats. Biologists have used significant caution when conducting research at the island, in fact the population data is collected through aerial photos to reduce on-the-ground disturbance. With the vulnerability of the Chase Lake colony, it should strengthen the state's resolve to protect the breeding colonies of birds occupying Gunnison Island.

Protection of nesting colonies is an essential key to long-term pelican conservation. The authors of the *American White Pelican Life History and Conservation,* Chapter 57, A Species Account of the Comprehensive Birds of North America, indicate that protection of breeding colonies from humans remains a primary management concern (Evans and Knopf 2004).

In addition to the colonial breeding population of pelicans on Gunnison Island there is also a large colonial breeding population of California Gulls, our state bird. Over the 20 some years that pelicans have been surveyed by biologist at Gunnison, they have also estimated numbers of California Gull nests. The 9,000 -11,000 California Gull nests represents one of the largest and most stable breeding populations associated with the GSL.

Historically there were several other American White Pelican colonies associated with GSL and Utah Lake. These colonies have long since failed due to human intrusion and activity. Once sites have failed they have not been reoccupied even though in some cases sites are currently more secure. The failure to re-occupy these historic nest sites is reason for concern and increased vigilance for site conservation at Gunnison Island.

Allowing additional development of Clyman Bay will affect and continue to erode the security that Gunnison Island has enjoyed in excess of 150 years of known pelican and gull nesting activity. Dike construction and maintenance will bring an added anthropogenic influence to the Bay including a dike additional miles closer to the island. These dikes will provide a road access for terrestrial predators to come closer to the island and a travel way to a land bridge to Gunnison during low lake periods.

In 1963 during a low lake event, you could wade to the island from the west side according to DWR reports of human disturbance before the island was protected. During this human intrusion into the colony, many young pelicans we killed. With the close proximity to Gunnison Island, a concentration pond dike may become a roost site for flightless fledgling pelicans exposing them to land predators. A dike also makes trespass easier for casual or intentional human trespass.

Gunnison Bay of the Great Salt Lake is an integral part of an aquatic bird conservation area of hemispheric importance. Its open water is important to several avian species of conservation concern during certain periods when only the Gunnison Bay can provide their habitat needs. Its shorelines are important to a regionally and nationally targeted shorebird for conservation and protection. It holds the single most important island used by colonial nesting birds at the GSL.

This American White Pelican Colony may currently be the largest single breeding population in North America. It is most likely the most secure. The added development of salt ponds and dikes will directly affect these resources and will continue to erode the security of the most protected and secure nesting site for two bird species of conservation concern for which Utah has primary stewardship responsibility. These are valued public trusts that the State of Utah must protect as part of our stewardship. They are Utah and national public trusts.

It is my request that you not allow additional ponding and diking in the Gunnison Bay and that you take additional steps to secure this important wildlife habitat in perpetuity.

Sincerely,

/s/

Don S. Paul
5928 River View Circle
Mountain Green, Utah 84050

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FORESTRY, FIRE AND STATE LANDS

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Arthur W. DuFault
State Forester/Director

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August 28, 1998

TO: John Kimball, Director
Division of Wildlife Resources

Arthur DuFault, Director/State Forester
Division of Forestry, Fire and State Lands

FROM: Max Reynolds, Vice President, Operations
Ken Warnick, Vice President, Administration
IMC Kalium Ogden Corporation

Clay Perschon
Division of Wildlife Resources

Edie Trimmer
Division of Forestry, Fire and State Lands

RE: Relinquishment of acreage leased by IMC Kalium in Bear River Bay in exchange for additional acreage in Clyman Bay

The purpose of this memorandum is to document the relinquishment of 6,917 acres leased for mineral extraction by IMC Kalium in Bear River Bay for the right to lease 6,716 acres in Clyman Bay without a competitive bid process (See attached map and amendments to IMC Kalium leases ML 19024-SV, ML 21708-SV, ML 22782-SV, ML 24631-SV, and ML 44607-SV). This exchange was pursued as a cooperative effort by representatives from IMC Kalium Ogden Corporation (IMC Kalium), Division of Wildlife Resources (DWR), and the Division of Forestry, Fire and State Lands (DFFSL) to further management goals on Great Salt Lake, benefit all parties and to explore possibilities of cooperation in good faith to accommodate mineral extraction and wildlife values on lake. This memorandum also gives an account of discussions at the request of IMC Kalium to act together to evaluate a proposal by IMC Kalium to dispose of waste salts by dredging or slurrying salts into Bear River Bay.

In January, 1996 Great Salt Lake Minerals (now IMC Kalium) filed a mineral lease application for 6,716 acres in Clyman Bay as part of their plans to expand production from their potash operations. At the time of application, lands were withdrawn from new leasing because DFFSL was preparing a mineral leasing plan for sovereign lands on Great Salt Lake. This plan was completed in June 1996, with management directions which include:

- withdraw lands within existing wildlife management areas and areas with more important wildlife, recreational and scenic values from new mineral leasing;
- evaluate opportunities for trading existing leases with significant resource conflicts for the right to lease in areas with less conflict.

To implement the Mineral Leasing Plan, DFFSL proposed an exchange of undeveloped lease acreage in Bear River Bay with acres in Clyman Bay to IMC Kalium in place of a competitive bidding process. DWR expressed interest in an exchange because the undiked areas of Bear River Bay have tremendous value to wildlife, specifically birds. Some of the values include: molting/brood rearing areas for Canada geese and ducks; a foraging area for fish eating birds such as pelicans, cormorants, western grebes, great blue herons; horned grebe nesting colony. In contrast, the acres proposed for lease in Clyman Bay have little wildlife value compared to those in Bear River Bay.

IMC Kalium, DFFSL, and the DWR met in February 1997 to discuss which leased areas DWR would like to see relinquished by IMC Kalium in exchange for the right to lease in Clyman Bay. During that meeting, Max Reynolds and Ken Warnick from IMC Kalium proposed that in addition to the discussion of the exchange of leased lands, the group also address, as part of the process, a proposal for increased waste salt disposal from IMC Kalium's concentration ponds. IMC Kalium disposes of 3-6.5 million tons of waste salt annually into the south end of Bear River Bay by flooding their ponds with fresh water per agreement with the state. The company hopes to dispose of an additional 3-4 million tons of salt by dredging or slurrying salt into Bear River Bay at a point further north. The decision of the group was to go ahead with discussion and to identify concerns and a process for evaluating the impacts in increased salt disposal. Several management directions in the mineral leasing plan support such a cooperative effort:

- implement data collection and analysis on movements of brines, extraction or deposition of salts, and return of salts to the lake system to monitor mineral salt resources in Great Salt Lake;
- establish indicators of change and parameters of tolerance to indicate when reevaluation of on-going practices should be made;
- explore opportunities for partnerships with government agencies, industry representatives, private parties, or organizations to enhance management of resources within Great Salt Lake meander line.

A "core" group comprised of Dave Butts from IMC Kalium, Clay Perschon from DWR, Wally Gwynn from Utah Geological Survey, Richard Denton from Division of Water Quality, Vickie Roy from Bear River Bay Migratory Bird Refuge, and Edie Trimmer from DFFSL was formed to gather baseline data prior to the start-up or trial run for disposal of waste salt by dredging. Brenda Landureth of the Great Salt Lake Planning Team has also attended recent meetings. This group continues to gather data on salinity, wind events, location and timing of bird populations in Bear River Bay.

The exchange of leased lands in Bear River Bay for lands in Clyman Bay was agreed to by

DFFSL, DWR and IMC Kalium in July 1998. DFFSL and DWR identified 6,917 acres of high habitat value sovereign lands leased by IMC Kalium in Townships 6 and 7 North, Range 5 West suitable for implementing the management directions in the Mineral Leasing Plan. IMC Kalium has consented to relinquish these lands in exchange for acres in Townships 6, 7 and 8 North, Range 10 and 11 West. Among the lands released by IMC Kalium are sovereign lands near Pokes Point. These lands are valuable to DWR because of fresh water ponds created by gravel pits above the surveyed meander on private lands owned by IMC Kalium.

DWR also identified lands of important wildlife value in Sections 16, 17, and 18, Township 7 North, Range 4 West. These lands were not included in the lease exchange but are valued by DWR for periods when lake level falls below 4200' in Bear River Bay. DWR is particularly interested in lands which are north and northwest of the existing dikes of IMC Kalium because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural "lake" within the bay. IMC Kalium values these same sections for possible pond expansion but believes that by increasing its pond size in Clyman Bay, these sections will probably never be needed. IMC Kalium, DWR and DFFSL are, as a result, now aware of areas of concern or potential resource conflicts that might arise in the future.

IMC Kalium, DWR and DFFSL will continue to work on data collection for key parameters in Bear River Bay and IMC Kalium's salt disposal project in cooperation with several other state and federal agencies. The intent of this effort is to evaluate what impacts any change in the method of disposal of waste salts could have on wildlife in Bear River Bay. This effort does not replace the regulatory authority of any state or federal agency but seeks to find mutually acceptable solutions which protect the Bear River Bay.

Enc.

cc: Dave Butts, IMC Kalium
Vickie Roy, U.S. Fish and Wildlife Service, Bear River Migratory Bird Refuge
Kathleen Clarke, Department of Natural Resources
Howard Rigtrup, Department of Natural Resources
Marty Ott, Department of Natural Resources
Sam Manes, Division of Wildlife Resources
Don Paul, Division of Wildlife Resources
Tom Aldrich, Division of Wildlife Resources
Richard Denton, Division of Water Quality
Wally Gwynn, Utah Geological Survey

TRANSFER OF STATE OF UTAH MINERAL LEASES FROM THE SCHOOL AND INSTITUTIONAL TRUST LANDS ADMINISTRATION TO THE DIVISION OF SOVEREIGN LANDS AND FORESTRY (CONT'D)

Lease No.	Lessee	County/Acres
ML 19059--SALT	Great Salt Lake Minerals & Chemicals Corp. PO Box 1190 Ogden, UT 84402	Box Elder 2,563.79 acres
ML 21708--SALT	Great Salt Lake Minerals & Chemicals Corp. PO Box 1190 Ogden, UT 84402	Box Elder 21,239.62 acres
ML 22782--SALT	Great Salt Lake Minerals & Chemicals Corp. PO Box 1190 Ogden, UT 84402	Box Elder 8,960.00 acres
ML 23023--SALT	Great Salt Lake Minerals & Chemicals Corp. PO Box 1190 Ogden, UT 84402	Box Elder 14,380.56 acres
ML 24631--SALT	Great Salt Lake Minerals & Chemicals Corp. PO Box 1190 Ogden, UT 84402	Box Elder 6,913.07 acres
ML 25859--SALT	Great Salt Lake Minerals & Chemicals Corp. PO Box 1190 Ogden, UT 84402	Box Elder & Weber 10,583.50 acres
ML 33378--MM	Mary E. Ashton c/o Gldn Eagle 10150-100 Street, Suite 760 Edmonton, Alberta T5J3H1 CANADA	Uintah 508.64 acres

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

DEC 21 2008

Ref: 8EPR-N

Mr. Jason Gipson
U.S. Army Corps of Engineers
Sacramento District
533 West 2600 South, Suite 150
Bountiful, UT 84010

RE: Supplemental comments for the Great Salt Lake Minerals Corporation Solar Evaporation Pond Expansion Project Environmental Impact Statement

Dear Mr. Gipson,

On November 14, 2008, U.S. Environmental Protection Agency (EPA) staff, Rich Sumner, Regional Liaison for EPA's Wetlands Program, met with Mr. Blaise Chanson of BIO-WEST, Inc., EIS Project Manager, to discuss the preparation of the Great Salk Lake Minerals Corporation Solar Evaporation Pond Expansion Project Environmental Impact Statement (EIS). The goal of the meeting was to discuss the development of a technical approach for evaluating the impacts to aquatic resources attributed to the proposed expansion of evaporation ponds within the North Arm and Bear River Bay areas of the Great Salt Lake. The technical approach is being developed in response to the EIS Project Scoping Comments generated by the project's Interagency Team.

An outcome of this meeting was a shared understanding of several factors that EPA will use to evaluate the efficacy of the impact assessment approach used in the Draft EIS. The following provides a summary of three of those factors: compliance with EPA's Clean Water Act, Section 404(b)(1) Guidelines; compliance with the federal Compensatory Mitigation Rule; and cumulative impacts analysis.

Compliance with EPA Section 404(b) (1) Guidelines

The technical rigor of the impact assessment approach used in the Draft EIS needs to be sufficiently robust for EPA to evaluate whether (a) the proponent-preferred project alternative overcomes the presumption against the discharge of fill into a special aquatic site and (b) the project will not cause significant degradation to the environment.

The need for a rigorous evaluation of potentially harmful impacts to the environment is based on risks described by the Interagency Team in their project scoping comments. Many of those comments focus on the threats of water quality degradation and habitat loss in the project areas. Those threats pose a risk to aquatic life use, and in particular aquatic dependent wildlife, within the broader geographical area. Avian use of the area is considered to be of national and international importance.

Our initial review of project scoping comments lead EPA to a strong presumption against the discharge of fill material into special aquatic sites identified within the project area. Our presumption is supported by EPA's Section 404(b)(1) Guidelines. To overcome that presumption, the project proponent must quantitatively demonstrate that an alternative, practical source for their product (potassium sulfate) does not exist in the market place.

In addition, the project proponent must demonstrate, with known certainty, that the proposed discharge of fill material and associated project operations will not cause significant environmental degradation. A standard for that type of impact analysis is the use of calibrated predictive models. The EPA assumes that both a water quality and a hydrologic model will be used in analysis, and that they will be linked to an avian habitat use model. For example, a water quality model should be used to evaluate risk posed by the possible suspension/discharge of selenium and mercury into the aquatic environment during solar pond construction and operation. The model also can take into account a likely increase in nutrient loading caused by future urbanization in the watersheds that discharge into Bear River Bay. A hydrologic model should be used to evaluate change in water movement and availability within the affected ecosystems as caused by solar pond placement and operation. An avian model should be used to predict impacts to aquatic birds based on direct habitat loss within a landscape context as well as habitat degradation caused by change in water quality and availability.

EPA's review of the Draft EIS will focus on how well project impact models are calibrated using recently acquired empirical data. Review also will consider whether a project-applicable avian model should be validated using data from other areas of the Great Salt Lake (e.g., Farmington Bay). All assumptions within the models that drive their predictive algorithms will need to be made explicit.

Compliance with the Corps of Engineers/EPA Federal Mitigation Rule

EPA's preliminary analysis of project impacts suggests that that the project as proposed will cause significant degradation of aquatic resources of the Great Salt Lake. Our prediction is based on past projects in the Great Salt Lake basin, the professional judgment of EPA staff and takes into consideration scoping comments received to date on the project. Given this situation, a discussion of compensatory mitigation becomes relevant to project scoping.

EPA's review of compensatory mitigation proposals is guided by the recent federal Compensatory Mitigation Rule (Rule). Based on the Rule, we will apply the following concepts when reviewing mitigation proposals linked to the proposed project:

(1) Watershed approach.

EPA's analysis of compensatory mitigation will be structured around the concept of "wetland landscape profiles (profile)." A profile is an accounting of an area's aquatic resource in terms of the abundance, distribution and condition of its classified ecosystem components (e.g., lacustrine mudflats, fringe/slope wetlands, playa, and impoundment wetlands). In other words, a profile is used to account for more than just the acreage of aquatic resources in an area. Ecological theory suggests that maintenance of all profile components is needed to sustain local wetland functions and ensure delivery of valued ecosystem services, including support of avian habitat.

For purposes of the Draft EIS, a "wetland landscape profile" should be developed for the Bear River Bay and adjacent wetlands. Another profile should be developed for the Gunnison Bay/ Clyman Bay area. Compensatory mitigation proposals can then be evaluated relative to the profiles. We can evaluate and determine whether the overall project can be developed in a way that does not degrade an area's wetland landscape profile (i.e., achieve "no net loss" in wetland quality and quantity).

(2) Consideration of "difficult to replace" aquatic systems.

The proposed project will cause a direct loss of lacustrine mudflats and an associated degradation of the wetland landscape profile for the broader project area. A replacement of lost and/or degraded lacustrine mudflat is not likely practical given the project setting. In the alternative, compensatory mitigation could possibly take the form of an in-kind rehabilitation, enhancement or preservation of other at-risk components of the areas' wetland landscape profiles. "In-kind" is defined in this situation as being compatible with an area's wetland landscape profile. For example, impacted lacustrine mudflat could possibly be mitigated through the restoration and protection of large wetland parcels within the shore lands in proximity to the project areas. The Legacy Nature Preserve (Utah Department of Transportation's mitigation project) is an example of the scope of activity that might be needed to prevent significant degradation from implementation of the project as proposed.

Another mitigation strategy that should be considered relative to the "difficult to replace." issue is adaptive management. Specifically, the EPA will consider whether the Draft EIS properly describes the practicability of phased project development. For example, the progression of evaporation pond construction can be tied to results from a mitigation effectiveness monitoring program. If monitoring results reveal that impacts from a phase of work exceed mitigation offsets, or cause other unintended consequences, then the authorization of subsequent planned work would be suspended or revoked.

(3) Clarification of aquatic resource function. condition and use.

EPA will rely on two ecological assumptions in its review of project alternatives. project impacts and any proposed compensatory mitigation. Our first assumption is that the project areas are in relative good ecological condition based on observed avian use. In other words, the aquatic areas are functioning at levels typically needed to support avian use. Our second assumption is that the occurrence of birds in the project areas is episodic. Occurrence is based on natural fluctuations in water quality and quantity that occur annually and over broader periods of time (i.e.. changing Great Salt Lake level elevations). The proper characterization of such avian use requires that bird occurrence (avian habitat availability) be assessed for optimal Great Salt Lake water elevations at the project locations. Optimal bird occurrence (avian use) can be reported by avian class and by species of special concern. The frequency in avian occurrence also should be reported using an appropriate predictive model.

Impact and mitigation evaluation should then be based on a clear articulation of how bird occurrence relates to avian use and the overall aquatic resource condition. Impact and mitigation evaluation also should take into account the full complement of best management practices needed to manage avian predation (e.g., protection of Gunnison Island nesting colonies) and secure desired aquatic resource conditions.

Cumulative Impacts Analysis

The November 28. 2007 comment letter from the Utah Resource Development Coordinating Committee underscores the need for the EIS to analyze the cumulative impacts of the proposed project. The State recommends the analysis take into account the past 40 years of mineral extraction activity in the project areas. In addition. EPA recommends that the EIS take into account the environmental impacts to the project areas caused by future urbanization within the counties adjacent to Bear River Bay.

For example. an analysis of the effects of urbanization in the Farmington Bay area can be used to predict future environmental conditions in Bear River Bay and associated shore lands. The forecast of future conditions should be based on a plan-trend scenario scaled relative to observed urban build-out trends and conditions in the Farmington Bay region. Future build-out conditions for the counties bounding the project area can be based on existing general growth projections for the Wasatch Front. The cumulative impacts analysis should also explore how past and present urbanization in the Farmington Bay area has placed local avian use at risk from habitat loss and degradation. Local habitat loss in Farmington Bay increases the significance of the future remaining habitat in Bear River Bay and to a lesser extent Gunnison Bay/Clyman Bay.

In addition, the cumulative impacts analysis should explore the placement of the proposed project and its associated impacts in context with "plan trend" future environment conditions. The future aquatic environment will be at risk from increased nutrient loading into Bear River Bay and from development pressures to fill most higher elevation wetlands (e.g.. above 4212' lake elevation). The potential risks associated with the building of a Bear River Dam and Diversion Project also should be acknowledged, as well as potential oil and gas development in

Gunnison Bay. The results of the cumulative impacts analysis can be described in terms of how the proposed project and its operation will impact the current wetland landscape profile as well as how it will impact a projected future wetland landscape profile.

The EPA remains committed to assisting the Corps in producing an EIS that includes an impact assessment approach based on the best available science. Please contact Dick Clark with any questions you may have about these supplemental technical comments. Mr. Clark can be reached at (303) 312-6748.

Sincerely,

Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection and
Remediation

Bcc: Dick Clark, EPA Region 8
Deborah Lebow-Aal, EPA Region 8
Jill Minter, EPA Region 8
Richard Sumner, EPA U.S.
Environmental Protection Agency
200 SW 35th Street
Corvallis, OR 97333

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UTAH NATURAL RESOURCES
Wildlife Resources

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memorandum

To: GSL Minerals Study Team

From: W. Clay Perschon
GSL Project Leader, DWR

Date: November 19, 1997

Great Salt Lake Minerals Corporation is proposing to push salt off of the western edge of the dikes on their evaporation ponds into the Bear River Bay. This discharge point will introduce salt directly into Bear River Bay, north of the railroad causeway that separates the bay from the main body of the Great Salt Lake. The salt is currently disposed of by flushing the evaporation ponds with water from the Bear River Bay; this waters is discharged from the evaporation ponds along the southern dikes- directly into the main body of the Great Salt Lake and also into the Bear River Bay. Salinity values in the Bear River Bay will be raised by discharging the dike stacked salt directly into the bay. The salinity values of this bay changes over time, due principally to changes in lake elevation and wind tides that push salt water into the bay, through the breaches in the causeways. There is currently a significant use of the bay by various bird species. The principle question is whether the salinities may change enough to diminish the values, and subsequent use of the bay, by the various bird species. *It is very important to understand that the changes in salinity values can cause affects in several ways, including, but not limited to: drinking water and sustaining the food base that the birds eat.*

We need to know what the existing salinity values of the bay are now, before a pilot project of dumping the salt begins. Great Salt Lake Minerals has committed to do some monitoring at various points in the bay. The DWR, in conjunction with the Department of Environmental Quality has committed to monitor other locations. Personnel time and vehicle use will be provided by those agencies. The DWR will make an airboat available for use to get to the shallow water areas to conduct sampling. Due to the expense of operating the boat, DWR will charge GSL Minerals $30.00/hour that the boat is run. The data collected will be of use to DWR, so we will contribute the personnel and vehicle costs. DWR will also make data available from bird surveys which we are already doing in the area.

Adv/Baseline data

The perimeter of the shoreline (which includes dikes) from the north end of the GSL ponds south to the railroad causeway, then west to Promontory Point and north to Black Rock and including the Bear River Bay between these areas is critically important to Canada geese. This is one of the largest concentrations of molting sub-adult geese found in the western United States. Our data shows that between 5,000 to 13,000 birds stage in this area between May 15 and July 10. While here the birds molt their flight feathers and must remain in the area to feed because they cannot fly. The birds graze on grasses found on the east side of Promonotory Point and likely also feed

WL's contin. data

on Widgeon grass which grows in the open waters of the bay. The site is suitable because the birds can avoid predation but the food sources are limited. The birds need a lot of energy to regrow the molted feathers. Ourwaterfowl biologists note that the birds lose a lot of weight by the time the molt is being finished. This being the case, if the food base for the geese is diminished even a little, it could have significant negative effects on the birds. Caspian Terns, White Pelicans, Western and Clark's Grebes use the area as a fishing/ foraging site. This occurs whenever the fish are in the area. The presence of these fish occurs when the salinity is low enough to allow the fish and the plankton they

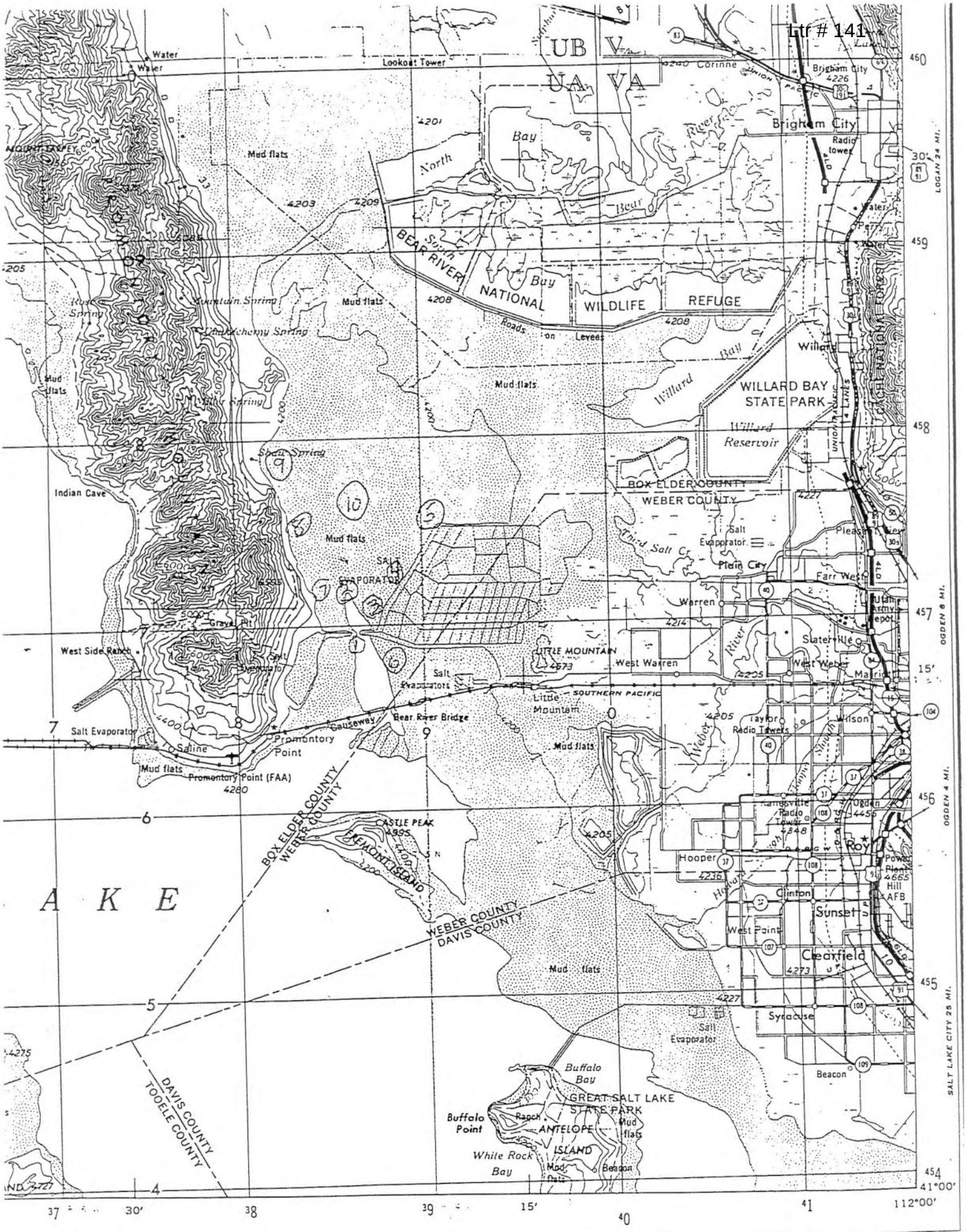
feed upon to survive. These suitable conditions occur in the spring when runoff dilutes the salinity and transports the fish down from points higher in the drainage. There are many other species of water birds which utilize this area. Waterfowl also utilize this area in great numbers. Their forage base would include macro-invertabrates, plankton and aquatic vegetation. At times there are islands of emergent vegetation that provide excellent nesting sites for different species of birds in the bay. All of these birds use the area because it is suitable to their life needs. The area provides a forage base to all of these species. Our principle concern is protecting the values which promote this use. Salinity can affect any or all of these. [illegible] at [illegible] particulars.

We propose that a monitoring program should measure the existing conditions before any salt discharge is permitted. We should have at least one full year of data. The salinity levels should be collected monthly from January through March. This period is important because the conditions that occur during the winter will have an effect on the forage base that is needed later in the year. Beginning in April, when the bird use increases, sampling should be done twice, in the first and the third weeks of the month. Conditions and values change so quickly at this time of the year that this frequency of sampling is necessary. This should continue through the first sampling period of November, then be followed by one sample in December. The data should be reviewed by the team as it is being collected. If there are deficiencies or problems, they should be addressed as quickly as possible. The team should be review the collected data and determine if the objectives are being met, this should be done on a frequent basis. This approach will save time if deficiencies can be corrected as soon as they are discovered. Special emphasis should be given noting fish kills. This may occur following a storm with an associated strong south wind that pushes salt water up into the bay. This fish kill may result in changes of feeding areas by some species of birds. Personnel at GSL Minerals would be in the best position to note dead fish washing through the breaches in the causeway. They should notify me when this happens.

The topographic maps identify the sampling points that should be monitored to assess salinity changes that may affect significant bird populations utilizing these areas. These points on the map simply identify areas where values to birds are high. When the biologists go into the field the exact points can be determined at that time and logged into the GPS units. Judgement is needed on site to select the areas which will result in the best data.

DWR will try to determine what food values exist in these areas for the birds. This will only be done opportunistically while conducting the water sampling. We do not have the personnel time to conduct this type of study. It may be necessary to address this component of the bird habitat values. The team should make this evaluation.

Propose.


Water
Lookout Tower
Corinne
Brigham City
Radio tower
Mud flats
North Bay
Bear River
South Bay
BEAR RIVER NATIONAL WILDLIFE REFUGE
Roads on Levees
Willard Bay
WILLARD BAY STATE PARK
Willard Reservoir
BOX ELDER COUNTY
WEBER COUNTY
Salt Evaporator
Plain City
Farr West
Warren
West Warren
West Weber
Slaterville
Marriott
Taylor
Wilson
Ogden
Roy
Hooper
Clinton
Sunset
West Point
Clearfield
Syracuse
Beacon
LITTLE MOUNTAIN
Little Mountain
SOUTHERN PACIFIC
Causeway
Bear River Bridge
Promontory Point
Promontory Point (FAA)
Saline
Salt Evaporator
West Side Ranch
Indian Cave
Gravel Pit
Shell Spring
Mountain Spring
Hackberry Spring
Silver Spring
CASTLE PEAK
FREMONT ISLAND
BOX ELDER COUNTY
WEBER COUNTY
WEBER COUNTY
DAVIS COUNTY
DAVIS COUNTY
TOOELE COUNTY
Buffalo Bay
GREAT SALT LAKE STATE PARK
Buffalo Point
Ranch
ANTELOPE ISLAND
White Rock Bay
Mud flats
Beacon
Hill AFB
Power Plant
LOGAN 24 MI.
OGDEN 8 MI.
OGDEN 4 MI.
SALT LAKE CITY 25 MI.
41°00'
112°00'

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RAY RINGS WEST

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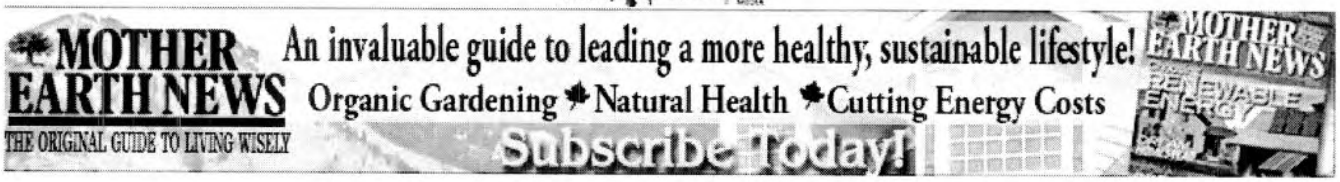

The People of the Sea

California's Salton Sea could dry up and die, or be fixed and developed. Either way, its renegades, recluses, ruffians and retirees will lose.

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Feature story - From the March 03, 2008 issue of High Country News by Terry Greene Sterling

Browse images »

The village of Bombay Beach, Calif., is quiet, save for the occasional screams of gulls on the nearby Salton Sea. It's 10:30 a.m. on a winter morning. Gusts of wind flecked with sand and salt whip for-sale signs in front of broken-down mobile homes and boarded-up bungalows. Front yards and empty lots are strewn with the relics of lost hope - an abandoned green motorboat tagged with graffiti, lifeless sedans, rotting camper shells, piles of used clothing, filthy couches, broken bottles, plastic garbage bags.

Eight years ago, census takers counted 366 residents in Bombay Beach; it's unclear how many live here now. Bombay Beach does not attract many newcomers. The current townies tend to stick to themselves, gathering for entertainment at the town's popular bar, the Ski Inn, where Mayor Wacko holds court.

On this particular morning, Wacko sits on a barstool, sipping a pink drink. His real name is Wayne Graham, but he prefers his nickname, which someone gave him years ago for reasons he can't remember. He is not really the mayor, either; his bar friends gave him the title and it stuck. He is 70, thick-set, with a gray walrus moustache and sad blue eyes. He struggles to compete with a TV tuned to a World War II movie with lots of explosions and a woman at the end of the bar who's bellowing that she's thinner than most of the old cows in Bombay Beach.

Wacko has been enchanted with the Salton Sea for 35 years, ever since he worked for the telephone company in Long Beach. He remembers the waning heyday of the Sea, back in the 1970s, when it was still known as California's Riviera. Cars lined up for miles to get a beachside camping spot. Tourists came to fish for orange-mouthed corvina, to race speedboats and water-ski, to spot celebs like Sonny Bono and Frank Sinatra. They came to escape the frenzy of Los Angeles, just 180 miles or so to the west.

Mayor Wacko escaped to the Sea practically every weekend. He drank until Sunday evening and somehow got himself back to the city in time for work, swearing never to drink again. Then he'd return to the Sea the next weekend and repeat the cycle.

He loved the isolation, the fishing, the beauty of the silver lake encircled by stark mountains. Eventually, he retired to Bombay Beach and leased a bar there. Things went OK until a deluge of irrigation water from Imperial Valley farms raised the sea's water level and flooded Wacko's bar and just about every other building on the Bombay Beach shore. When the Sea retreated, it left a wasteland of rotted buildings and vehicles resting on salt-white barnacle shells and fish bones.

This bizarre body of water isn't really a sea at all; it's a land-locked agricultural drainage sump 35 miles long and 15 miles wide and up to 50 feet deep in places. It sits in the Salton Sink, a below-sea-level trough embedded in one of the hottest deserts in North America. For thousands of years, the dry Salton Sink periodically morphed into a lake whenever the flooding Colorado River silted its own channel, jumped its banks, and careened crazily into the Sink. Because the Salton Sink has no outlet, the floodwater eventually evaporated, and the Sink reverted to a dry lakebed.

Then man stepped in.

In 1905, when engineers diverted the waters of the Colorado River to irrigate the Imperial Valley, the Colorado River crashed through a canal bank and roared into its old digs at the Salton Sink. It took over a year to coax the Colorado back into its natural channel, and by then the Salton Sea had been created. This time, it wasn't allowed to dry up.

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For a century now, the Sea has been sustained by irrigation waters that drain from the nearby Imperial Valley and Mexico. This water replaced the roughly 1.3 million acre-feet of water that was lost through evaporation. It also dumps tens of thousands of tons of fertilizer and four million tons of salt into the Sea every year, according to the Pacific Institute, an independent think tank that studies, among other things, environmental and sustainability issues. Today the Sea is saltier than the ocean. Its nutrient-rich waters periodically belch up pockets of hydrogen sulfide and ammonia that kill off thousands of tilapia, one of the few fish that can survive the salty swill.

The increasing salinity and pollution, combined with a long-term water transfer from Imperial Valley farmers to thirsty Southern California coastal cities, threaten to destroy the Sea and the creatures - and culture - that rely on it.

The Sea's elevation has dropped over one foot in the past five years, the Pacific Institute says, and exposed about 3,500 acres of lakebed. Once the water transfers take full effect in 2018, it's expected to shrink by about 40 percent.

Here's the problem: If the Sea is allowed to dry without treatment, it will generate 17 tons of unhealthy dust a day, according to the Pacific Institute. Winds pebbled with stinking salty sand will sicken asthmatics, children and the elderly. Crops in the nation's winter salad bowl - the Imperial Valley - will be harmed. In short, if nothing is done to restore the Salton Sea by 2018, we'll all feel the fallout.

First to suffer will be Imperial County residents in the path of prevailing southeast winds, who already suffer from a high childhood asthma rate. Tony resort communities like Palm Springs, some 80 miles to the west, would also be hurt. And the millions of birds on the Pacific Flyway that rely on the Sea as a substitute wetlands, now that California has destroyed almost 95 percent of its natural wetlands, would have no place to go.

But so far, little has been done to save the Sea. In January, the federal Bureau of Reclamation proposed a restoration plan so ponderous and slow-moving that it essentially puts the onus of fixing the mess onto the state, which is legally bound by water agreements to restore the Sea.

Even so, the California Legislature has yet to formally adopt a restoration plan or choose an agency to lead the restoration. Nor has it found the dollars to do the work. That's due to a budget crisis, and perhaps to the fact that birds - and the smattering of retirees, renegades, ruffians and recluses who live at the Sea - have little voice in the Sacramento Statehouse.

"It's the same old shit all the time, it's been the same story for 35 years," says Wacko. "They'll just let the Sea go. They are going to let it dry up."

Only Sonny Bono could have saved the Sea, Wacko believes. The '60s-crooner-turned-Republican-congressman had long advocated for its restoration, He died in a 1998 skiing accident, however, and his widow, Mary, was elected to his seat. Last year, she supported a $10 million federal appropriation to restore the Sea - a fraction of the estimated multibillion-dollar cost of restoration. Although Sonny remains a Bombay Beach icon, most locals feel disappointed by Mary. (Mary Bono did not respond to a request made through her press office for an interview.)

Wacko looks at it this way: Both he and the Sea will die, and he hopes he dies first.

Cliff Dove was crippled

by a work-related spinal injury in 1973, when he was a 43-year-old So-Cal electronics contractor. He sold his business and embarked with his wife, Kathy, on an offbeat life of travel. The Doves now winter in a vintage Silver Streak trailer at Bashford's Hot Mineral Spa, just a few miles southeast of Bombay Beach.

The spa's warm thermal baths soothe the aches and pains of many of the septuagenarian snowbirds who winter here. The RV park sits beneath the Chocolate Mountains, sparsely vegetated umber-hued hills that from a

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distance resemble soft Play-Doh shaped and imprinted by a child's fingers.

One of several micro-communities that rim the Sea, Bashford's Hot Mineral Spa is a beacon of post-war 1950s white suburban Ozzie-and-Harriet *joie de vivre*.

The snowbirds seem hell-bent on being happy. Drawn to the area because it's cheap, and reasonably close to good docs in the LA vicinity, they have plenty to gripe about; many suffer chronic pain and the dollar isn't what it used to be. But instead, they tool around in their golf carts to potlucks, exercise classes, swap meets, cocktail parties, barbecues and dances in the multipurpose room. They decorate their RV spaces with cheery miniature windmills, watermelon-pink plastic flamingoes, green shamrocks and brown saguaros. Yet behind their carefree, kitschy front yards, the retirees at Bashford's Hot Mineral Spa are aware of the plight of the Sea. On a winter afternoon, "fashion show" participants line up outside the multipurpose room. Plastic measuring cups dangle from the head of Jim Smith, a 67-year-old retired truck driver dressed in a turquoise-blue pajama top and shiny gold pants. He stands in front of a golf cart that says *I brake for boiled peanuts* and worries that classism will turn the Sea into a "mud hole." The government won't "get off its butt and do something," Smith says, because the demise of the Sea "won't directly affect the right people."

Three elderly fashion show "can-can girls" wearing skirts made of clanging beer cans fret that a neglected Sea will render the world a less hospitable place for their grandkids.

Willis Thomas, a 67-year-old retired school custodian from Oregon who came to Bashford's to "find his tribe," is convinced profiteering corporations are behind the Sea's impending demise. It all fits in with his vision of the future, which includes the end of the world in 2012.

Cliff Dove and his neighbor, Bob Emmett, a retired chemical engineer, are the only Bashford's snowbirds to turn into actual environmental activists. This morning, the two friends are sipping coffee in Dove's trailer. The radio plays "The Way You Look Tonight," and Dove sits at a small table covered with maps, calculations, tidal charts. He has thinning white hair, direct blue eyes, a substantial moustache. Emmett, a thin, intense man with a full head of gray hair, wears a golf shirt and jeans.

The two 77-year-olds have no idea if they'll even be alive in 2018, when an untreated Sea would start shrinking dramatically. Nevertheless, they care deeply about the damage a dry sea would wreak on future generations. They've come up with a restoration plan that amounts to uber dialysis: transporting Salton Sea water via canals into Mexico's Laguna Salada, less than 100 miles to the south, and replenishing the Sea with water from the Gulf of California.

State and federal officials said their plan was too costly, was diplomatically unfeasible, and would damage Mexico's delicate Colorado River Delta. But Dove and Emmett believe their idea was too hastily dismissed.

Neither of them holds out hope that the state of California will restore the Sea. In May 2007, Mike Chrisman, California's secretary of resources, proposed an $8.9 billion, 75-year restoration plan. Chrisman suggested reconfiguring the Sea into a 45,000-acre horseshoe-shaped lake held in place by massive, expensive rock walls. "Brine sinks" would collect the salts that would need to be leached out of both the new lake and the proposed 62,000 acres of wetlands. Dust from the newly exposed bed of the former Sea would be controlled by creating bird habitat, planting salt-loving plants and, ironically, irrigating. The water would come from two agricultural drainage canals at the lake's south end.

(One of these canals, the so-called "New River," originates 60 miles south in Mexico and carries industrial waste and sewage into the United States. Although residents on the U.S. side of the border are hopping mad about this, officials say the water is safely diluted with agricultural runoff by the time it gets to the Sea.)

The Audubon Society and other environmental groups oppose the Chrisman plan, saying the outrageously expensive recreational lake is just designed to appease developers.

Mike Cohen, a senior analyst with the Pacific Institute, favors a plan that would cost 75 percent less and focus more on wetlands development and dust control. It would also call for a 10,000-acre recreational lake fed by runoff from the Coachella Valley.

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Given the elaborate uncertainties of the Chrisman plan, Cliff Dove and Bob Emmett don't think their own idea is all that quixotic.

"We're looking into the future," says Emmett. "It's already getting dusty."

In 1984, a drifter

named Leonard Knight camped in the desert outside Niland, a little town on the eastern side of the Salton Sea that called itself the tomato capital of the world. Knight was 53, a Vermonter who'd come to the desert to fly his handmade parachute. He never could get the parachute to work; it eventually rotted.

Knight was stranded near a former World War II Marine training camp. Not much was left of old Camp Dunlap, just dozens of concrete slabs where buildings once stood. The land belonged to the state of California, which didn't object to squatters camping on the slabs.

A drifter could live like a king in Slab City. You didn't have to pay rent, you could bathe in nearby hot springs, you could dig your own latrine and buy food a few miles down the road in Niland. Best of all, no one asked about your past.

Leonard Knight stayed and built a mountain. For 24 years, he hauled water to his campsite in his old fire truck and mixed it with sand and straw donated by farmers. Today, the mountain is two stories tall and slathered with 150,000 gallons of gaudy Crayola-bright paint. A giant white cross stands at the top, with GOD IS LOVE painted below it in red and pink. Underneath this, Knight has painted a red heart and white lettering that says: JESUS I'M A SINNER PLEASE COME UPON MY BODY AND INTO MY HEART.

He calls this work in progress Salvation Mountain.

Knight is now 76 and a little hard of hearing. He's rail-thin, white-haired. Compared to many other Slab City area residents, Knight looks as if he just stepped out of the shower. (He uses the bathroom at a friend's place in Niland.) Knight wears immaculate thrift-shop outfits - today it's a striped shirt, gray jacket, black trousers, white sneakers.

A few years ago, California environmental officials sought to tear down Salvation Mountain, saying lead from the paint might be poisoning the soil. They changed their minds after locals and folk-art lovers protested.

If the Salton Sea dies, Knight and his mountain will be left in the middle of a dusty wasteland. On the other hand, if the Sea is restored and begins attracting a more upscale crowd of birders, golfers and boaters, it's hard to imagine Knight's universe surviving. Would habitues of waterfront suburbia tolerate Knight and his possibly lead-infested mountain, or Slab City residents with their hand-dug latrines?

Whatever happens, the future looks bleak for the hundreds of offbeat characters who, like the birds, have sought refuge here. If the Sea shrivels into a briny, fly-infested puddle, the communities that surround it may become ghost towns. But if it's restored, the area could boom, making it too pricey for the current inhabitants of Bombay Beach and Slab City.

It's already becoming expensive for Tugboat Willy. This is his 24th winter on the slabs, and he could barely afford the $300 gas bill to drive his Dodge van down from his digs in Klamath, Calif.

Willy is 62 and retired, the former owner of a group home for boys, he says. Like many others at the slabs, he doesn't give his last name. A self-described "bona fide Haight-Ashbury hippie" with a disease that causes brittle bones, Willy is drawn to "a free warm place in the wintertime."

The lifestyle suits him just fine. At Slab City, he parks where he wants and if he doesn't like his neighbors, he moves to another spot. He estimates that today Slab City is home to several hundred people. Some, like Willy, sleep in their vehicles, some in RVs, some sleep outside. They decorate their homesteads with American flags,

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furnish them with junkyard couches. Some scavenge the desert. The community is littered with old mattresses, tires, car parts, metal junk discarded by the Marines during World War II drills. You can find whatever you want in Slab City, as long as you don't want much. One slabber even runs a library, where Willy checks out Christian fiction.

Slab City also has a nightclub/community center of sorts - the Range. Guests can lounge on school-bus seats, discarded couches and La-Z-Boys and watch the activities on a stage sandwiched between two bus carcasses. Here, slabbers can square-dance or rave, and no one cares.

Lately, though, Willy's noticed tension between the law-abiding slabbers and certain others, who "lean towards heavy alcohol and meth, and act like it's the Wild West."

"Their lives are at the lowest end of the low," says Willy. "Outside of where the next can of beer comes from and where their water comes from for the next day, they don't have much to do. There are a lot of damaged people here, physically or mentally." (Neither the Imperial County Sheriff's Office nor the chief of the volunteer Niland Fire Department, which is occasionally called out for emergencies, returned calls seeking comment on crime rates at Slab City.)

Willy doesn't go down to the Sea as much as he used to; it stinks sometimes, and mummified tilapia dot the beaches. Once, Willy's poodle fell in, and even though Willy shampooed the dog repeatedly, it took months for the green-brown stain to wear off. "The Salton Sea could be a real gem," he says, "but it would cost a few billion dollars."

And at Slab City, that much money is impossible to imagine.

California State Highway 111

runs north and south along the east shore of the Salton Sea. Once the road passes Niland heading south, old school buses filled with lettuce pickers begin to whiz past, towing portable toilets on their way to Imperial Valley farms. "No Trespassing" signs are tacked onto bales of hay in front of farmhouses, sheep graze in fallow fields, yearling calves nosh alfalfa. On the Sea's south end, six CalEnergy geothermal power plants shoot up fat geysers of steam as tens of thousands of migratory birds swoop down into the small and crowded Sonny Bono Salton Sea National Wildlife Refuge. Birds are everywhere. Some compete with crop dusters for airspace. Others dive for fish in ditches full of khaki-colored agricultural runoff destined for the Sea. Biologists worry about the effects of those agricultural fertilizers, which can cause the die-offs of pile worms and fish, two key food sources for the Salton Sea's birds.

If the Sea is not restored, the Pacific Flyway's birds will be in big trouble. But so far, state and federal governments have set aside only about $87 million, which would just about cover permitting procedures and the beginnings of the critical "early start" bird habitat restoration.

"Early start habitat will cost at least $120 million," says Dale Hoffman-Floerke, who works on the Salton Sea restoration for the California Department of Water Resources. Clearly, more money is needed.

"Things could be better, but they aren't dire at this point," she says bravely. "We're still actively pushing solutions."

Hoffman-Floerke has withstood the wrath of locals in public meetings and knows that "whatever happens to the Sea" will impact the people living on its shore, and some "may never be happy with what we do." "People bought their homes believing a body of water would always be near it," she says.

"That might not be the case."

State Highway 111 intersects with State Highway 86 near Brawley, which is directly downwind of the Sea and gets a considerable share of its reek and dust. It's no coincidence that Imperial County has the highest childhood

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asthma hospitalization rates in the state.

As Highway 86 travels north up the western shore of the Sea, agribusiness gives way to yet another landscape of broken dreams and destroyed communities. Marina Drive leads into Salton City, a once-bustling tourist town now fringed with half-finished housing developments. Dozens of homes are advertised for rent or for sale, and signs along the road ask: *Credit less than perfect?*

The motel near the town's dead marina, Johnson's Landing, is for sale. A sign on the boat ramp recalls the glory days of sports fishing, boasting that the Salton Sea is stocked with gulf croaker, corvina, and sargo. Today, those fish are long gone, as are the queues of boats that once formed at the ramp.

"I haven't seen a boat in the water in over three years now," says Rick Davis, a longtime Salton City resident who helped build the boat ramp decades ago.

Davis stands by the ramp late on a winter afternoon. The sun casts honey-colored light on the desert mountains, and the Sea is silver and still. The sight comforts him, for he regards the Salton as an old, old friend.

He has lived at the Sea most of his life. His family moved here in 1963; his father, who had been in the military, suffered respiratory problems, and the family was told the Sea would soothe his lungs. As a teenager, Davis bused tables at the busy Salton City Yacht Club and worked at the golf course near the Holly House restaurant. He met Sonny and Cher once, when they came to Salton City to perform and hang out.

By the time his own three kids were teens, Salton City was dead. The few youngsters remaining in the area had little to do. Davis organized hikes and trips, taught the kids to love the desert.

Davis is now 54 years old, and has a receding hairline and grey moustache. A ring tattoo wraps around one finger. He walks stiffly due to injuries he got on the job - he's a heavy equipment operator.

The mere sight of the Sea fuels what he calls his 1960s-style activism, which involves publicizing the Sea's plight and persuading people to sign petitions to restore it to its former glory. Thanks to the Internet, and the few German tourists who stop at the Sea en route to Death Valley, he says his petition drive is taking off. He hopes to organize all the communities that ring the Sea to push for its full restoration.

"The government broke the Sea," he says. "The government can fix it."

The way he sees it, restoring the Sea would restore tourism, which would bring jobs to the economically depressed area. And if a suddenly booming economy were to drive out the drifters and the renegades who don't want to work and couldn't afford to live there, he says, "It's unfortunate, it's sad, but that's the way life is."

To bring attention to the Sea's plight, he organized a New Year's Day event. Locals poured gallons of fresh water into the Salton to reduce its growing salinity. Davis has vowed to pour seven gallons of fresh water each week into the Sea's foul waters.

It's just a symbolic act, he knows, but it's also an act of hope.

Terry Greene Sterling is an award winning Arizona journalist whose work has appeared in many newspapers and magazines, including The Washington Post, *Newsweek.com, salon.com and* Phoenix New Times. *This is her first piece for High Country News.*

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The Aral Sea Disaster

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Key Words

water, fish, Central Asia, irrigation, rivers, environmental degradation

Abstract

The Aral Sea is a huge terminal lake located among the deserts of Central Asia. Over the past 10 millennia, it has repeatedly filled and dried, owing both to natural and human forces. The most recent desiccation started in the early 1960s and owes overwhelmingly to the expansion of irrigation that has drained its two tributary rivers. Lake level has fallen 23 m, area shrunk 74%, volume decreased 90%, and salinity grew from 10 to more than 100g/l, causing negative ecological changes, including decimation of native fish species, initiation of dust/salt storms, degradation of deltaic biotic communities, and climate change around the former shoreline. The population residing around the lake has also been negatively impacted. There is little hope in the foreseeable future to fully restore the Aral Sea, but measures to preserve/rehabilitate parts of the water body and the deltas are feasible.

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INTRODUCTION

The Aral Sea is located amid the great deserts of Central Asia (**Figure 1**). Its drainage basin covers 1.8 million square kilometers within seven nations: Uzbekistan, Turkmenistan, Kazakhstan, Afghanistan, Tajikistan, and Iran. Only Kazakhstan and Uzbekistan are riparian on the sea proper, with each possessing an approximately equal length of shoreline. The entire Aral coastline within Uzbekistan lies within that nation's Karakalpakstan Republic. A terminal lake, it has surface inflow but no surface outflow. Therefore, the balance between inflows from two rivers, the Amu and Syr (hereafter referred to as the Amu Dar'ya and Syr Dar'ya rivers, respectively, although dar'ya in the Turkic languages of central Asia means river) and net evaporation (evaporation from its surface minus precipitation on it) fundamentally determine its level. Net groundwater inflow, estimated at –1.3 to 3.4 $km^3 year^{-1}$ has been considered an inconsequential part of the water balance (Bortnik & Chistyaevaya 1990, p. 38). Although this part of the water balance has become a more important factor in the past several decades as surface inflow diminished.

Figure 1

Aral Sea Basin.

In the recent geologic past (past 10,000–15,000 years), the sea has endured significant level fluctuations, perhaps as much as 40 m (Micklin 2004). The major level changes prior to 1960 resulted from diversion of the Amu Dar'ya westward so that it flowed into the Sarykamysh hollow, and sometimes farther through the Uzboy channel to the Caspian Sea after it overtopped Sarykamysh, rather than into the Aral Sea. These diversions resulted from natural events (sedimentation of the bed and subsequent breaching of the river's left bank during spring floods) and from human actions, both inadvertent (e.g., failure of irrigation works) and purposeful (destruction of dikes and levees built to keep the river flowing to the Aral) during times of conflict.

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RECENT WATER BALANCE CHANGES

From the mid-eighteenth century until the 1960s, sea level variations were less than 4.5 m (Bortnik 1996). Instrumental observation began in 1911. From then until the early 1960s, the sea's water balance was remarkably stable with annual inflow and net evaporation never far apart. The average of each of these water balance components was near 56 km^3 during this period, with net evaporation consisting of evaporation of 66 km^3 from the sea's surface (estimated by both theoretical and empirical formulae) minus precipitation on the sea's surface (calculated from measurements at shore and island stations) of 9 km^3 (**Figure 2**) (Bortnik & Chistyaevaya 1990, pp. 34–38). Hence,

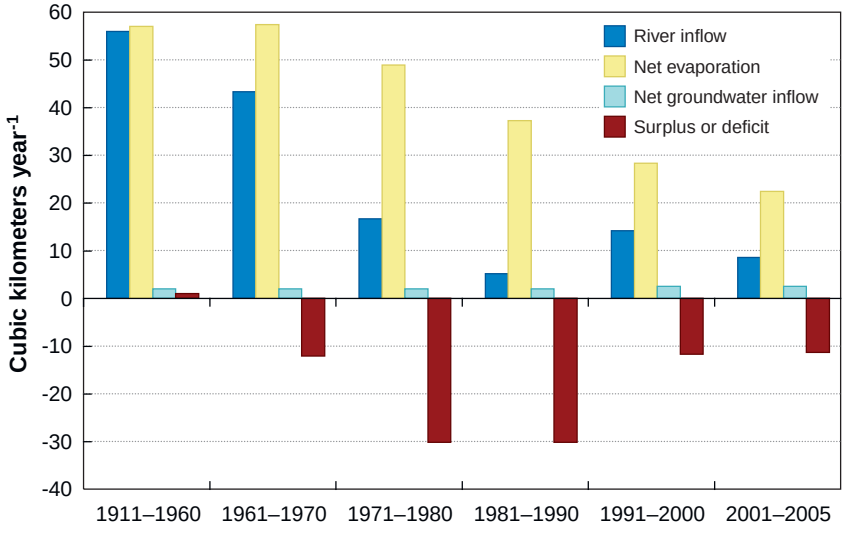

Figure 2

Average annual water balance for the Aral Sea (1911–2005). River inflow: flow of Syr Dar'ya and Amu Dar'ya to Aral Sea; net evaporation: evaporation from sea surface minus precipitation on it; net groundwater inflow: groundwater flow to sea minus flow from sea; surplus or deficit: (inflow to sea + net groundwater inflow) – net evaporation. From Bortnik & Chistyaevaya 1990, table 4.1, p. 36; Uzglavgidromet 1994–2003, Micklin 1990–2006, Annual Data 1987, Shivareva et al. 1998.

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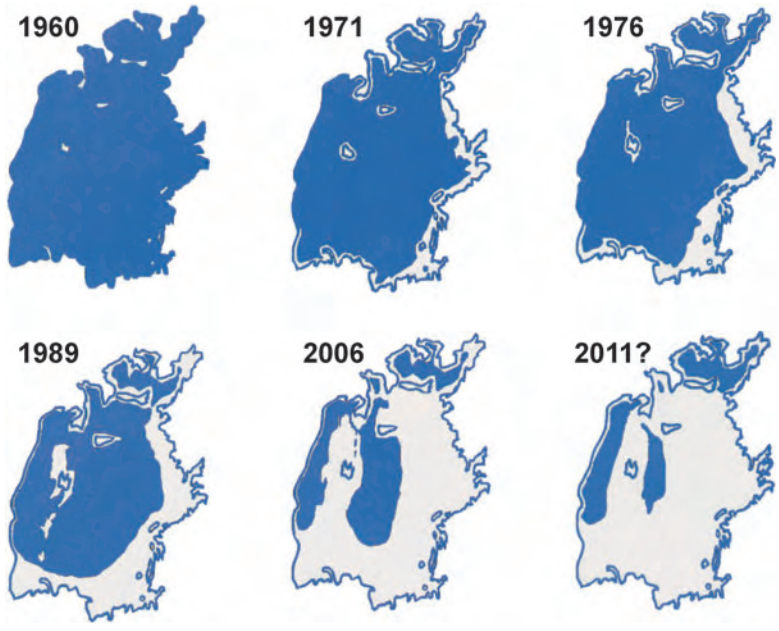
Figure 3

Changing Profile of the Aral Sea 1960–2011.



the water balance was in long-term equilibrium with a maximum lake level variation of less than one meter.

Transpiration: evaporation of water from the leaves of plants and its corresponding uptake from roots in the soil

Phreatophytes: water-loving plants that grow along natural and artificial water courses in arid regions

At slightly more than 67,000 km^2, the Aral Sea, according to area, was the world's fourth largest inland water body in 1960 (Micklin 1991, pp. 42–54). As a brackish lake with salinity averaging near 10 g/l, which is one-third less than that found in the ocean, it was inhabited chiefly by fresh-water fish species. The sea supported a major fishery and functioned as a key regional transportation route. The extensive deltas of the Syr Dar'ya and Amu Dar'ya sustained a diversity of flora and fauna. They also supported irrigated agriculture, animal husbandry, hunting and trapping, fishing, and harvesting of reeds, which served as fodder for livestock as well as building materials.

The water balance, morphology, and ecology of the Aral Sea have changed dramatically since the early 1960s. The sea has steadily shrunk and salinized (**Figures 3, 4,** and **5**; **Table 1**). Expanding irrigation that diminished discharge from the two tributary rivers to a fraction of earlier volumes has been the main cause. Irrigation has been practiced in the Aral Sea Basin for millennia, but until the 1960s it did not substantially diminish inflow to the sea, as water losses to this activity were largely compensated by reductions of natural evaporation; transpiration from phreatophytes, such as salt cedar (also known as tamarisk, gallica Linnaeus), willow (Salix), and cottonwood (Populus); and filtration in the deltas of the Amu Dar'ya and Syr Dar'ya, primarily owing to the truncation of spring floods (Micklin 2000, pp. 24–42). However, growth of this activity from around 5 million to 7.9 million hectares between 1965 and 2000 markedly reduced river discharge to this water body, as these compensational factors were overwhelmed by the construction of huge irrigation systems

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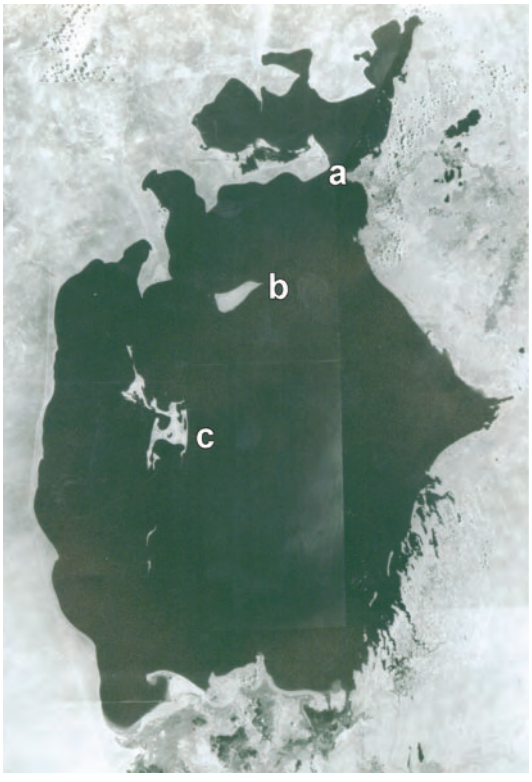

Figure 4

Landsat MSS composite image of the Aral Sea, summer 1977. (*a*) Berg Strait, (*b*) Barsekelmes Island, (*c*) Vozrozhdeniya Island.

into the deserts. This led to a much larger share of water withdrawn from the Amu Dar'ya and Syr Dar'ya being lost to evaporation rather than returned to these rivers as had previously been the case when irrigation was mainly confined to the deltaic and littoral zones (Micklin 1991, pp. 44–46; Micklin 1996).

The dramatic drop in river inflow for the period after 1960 is clearly shown on **Figure 2**. For the 1960s, discharge to the sea averaged 43 km^3 $year^{-1}$ and net groundwater inflow averaged perhaps 2.5 km^3 $year^{-1}$, whereas net evaporation was 57 km^3 $year^{-1}$, giving a deficit of 12 km^3 $year^{-1}$. The difference between river inflow and net evaporation was particularly pronounced during the 1970s and 1980s, with water balance deficits for both periods above 30 km^3 $year^{-1}$. Consequently, the sea dropped especially rapidly over these two decades. Reportedly, the Syr Dar'ya provided no flow to the Aral from 1974–86 and the Amu Dar'ya provided minimal or no flow for 1982–83, 1985–86, and in 1989 (Izrayel' & Anokhin 1991).

The Aral's water balance substantially improved during the 1990s owing to more precipitation in the flow generating mountains of the Aral Sea Basin and some reduction in water withdrawals for irrigation (12% between 1980 and 1995) (**http://www.ec-ifas.org/Russian_version/Aral_crises/water_use**). River discharge to the sea, averaging approximately 14 km^3 $year^{-1}$, and a significant reduction in net evaporation reduced the water balance deficit to approximately 12 km^3 $year^{-1}$. (Indeed,

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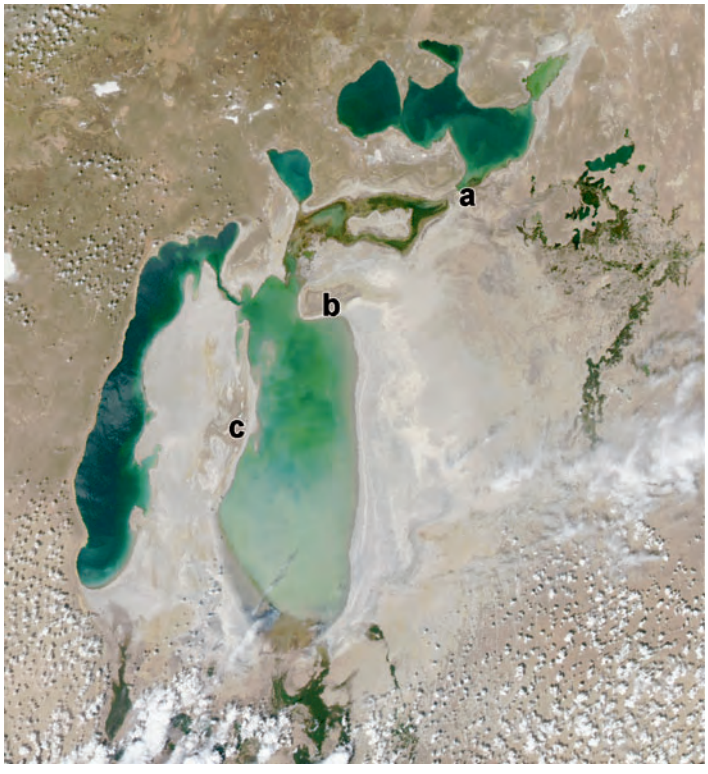
Figure 5

MODIS 250 meter true-color image of Aral Sea, May 26, 2006. (*a*) Former Berg Strait, (*b*) former Barselkelmes Island, (*c*) former Vozrozhdeniya Island.



desiccating water bodies manifest a strong evaporation negative feedback mechanism: As the sea surface diminishes, so does evaporation, slowing the desiccation process). Severe drought affected the mountain zones, particularly the Pamirs, which were a source of water for the Amu Dar'ya, from 1999 into 2002 (Agrawala et al. 2001). Average annual inflow to the Aral Sea for 1999 through 2001 was near 5 km^3, with nearly 90% provided by the Syr Dar'ya (P. Micklin 1990–2006, unpublished observations and data gathered by the author during an expedition to the Aral Sea, August 22–September 23, 2005, funded by the Comm. Res. Explor., Natl. Geogr. Soc., Grant 7825–05 2006). For the period 2001–2005, inflow to the sea averaged approximately 9 km^3 and net groundwater inflow averaged perhaps 2.5 km^3, with net evaporation of approximately 22 km^3, giving a deficit around 11 km^3.

The Aral separated into two water bodies in 1987–89: a "Small" Aral Sea in the north and a "Large" Aral Sea in the south. The Syr Dar'ya flows into the former and the Amu Dar'ya into the latter. Between 1960 and January 2006, the level of the Small Aral fell by 13 m and the Large Aral fell by 23 m (**Table 1**). A channel (river) has connected the two lakes, with flow from the Small to the Large Aral. This flow has been primarily during the spring/early summer period when discharge from the Syr Dar'ya to the Small Aral is greatest. During most of the year, the flow is much less and it often entirely ceases. The area of both seas taken together diminished by

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Table 1 Hydrological and salinity characteristics of the Aral Sea, 1960–2011

Year	Level (m asl)	Area (km^2)	% 1960	Volume (km^3)	% 1960	Avg. salinity (g/l)	% 1960
1960 (whole Aral Sea)[a]	53.4	67,499	100	1089	100	10	100
Large Aral Sea	53.4	61,381	100	1007	100	10	100
Small Aral Sea	53.4	6118	100	82	100	10	100
1971 (whole Aral Sea)[a]	51.1	60,200	89	925	85	12	120
1976 (whole Aral Sea)[a]	48.3	55,700	83	763	70	14	140
1989 (whole Aral Sea)[b]		39,734	59	364	33		
Large Aral Sea	39.1	36,930	60	341	34	30	300
Small Aral Sea	40.2	2804	46	23	28	30	300
2006 (whole Aral Sea)[b]		17,382	26	108	10		
Large Aral Sea	30.0	14,325	23	81	8	East Sea >100? West Sea 70–80	100 700–800
Small Aral Sea[d]	40.5	3057	50	21	26	12	120
2011 (whole Aral Sea)		12,130	18	90	8		
Large Aral Sea[c]	28.3	8550	14	62	6	>100	>1000
Small Aral Sea[d]	420	3258	53	27	33	~10	100

[a]Annual average.
[b]On January 1.
[c]The sea will have divided into a western and eastern part.
[d]After implementation of north Aral project in 2005.
Data for 1960, 1971, and 1976 from Annual Data 1987 and Bortnik & Chistyaevaya 1990, table 8.4, p. 72; data for 1989, 2006, and 2011 from Uzglavgidromet 1994—2003; Micklin 1990–2006, 2005; Ptichnikov 2000, 2002, 2002–2003.

74% and the volume by 90%. MODIS real-time satellite imagery shows that by late 2005, the Large Aral Sea became three distinct water bodies: a "deep" western lake and a "shallow" eastern lake with a narrow channel connecting them and a cut-off Gulf of Tshche-Bas (which, for the last several years, including 2006, has reconnected for a short period to the Large Aral during the spring/early summer period of heavier runoff) (MODIS Rapid Response System 2006).

Efforts to partially restore/preserve the Small Aral Sea are underway. The World Bank and the government of Kazakhstan completed an 85 million USD project in fall 2005 that created a 13-km dike to block the flow from the Small to Large Aral Seas (Micklin 2005) Because of heavier-than-expected winter inflow to the Small Aral from the Syr Dar'ya, the level has risen much more rapidly than expected (Greenberg 2006, Pala 2006). A comparison of the 1:200,000 Soviet-era bathymetric map of the Aral and MODIS satellite imagery indicates the level reached ~42 m by early May 2006, about 2 m above the figure immediately prior to the closure of the dike (MODIS Rapid Response System 2006, see **Figure 5**). Already, the dike discharge gates have been opened and flow again allowed to the Large Aral. The level of the Small Aral will be maintained at 42–m, freshening the water body and improving its ecological condition as well as fishery prospects.

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ECOLOGIC AND HUMAN CONSEQUENCES

Desertification: degradation of land in arid, semiarid, and subhumid areas resulting from various factors, including climatic variations and human activities

Halophytes: plants and plant communities that are adapted to or can tolerate elevated levels of salinity in the root area

Xerophytes: plants and plant communities that have structural and physiological adaptations enabling survival in areas with very little free moisture

Tugay: vegetation communities of trees, bushes, and tall grasses growing along rivers in the deltas of the Syr Dar'ya and Amu Dar'ya

The mainly human-induced desiccation of the Aral Sea and flow reduction, salinization, and pollution of its influent rivers has had severe negative effects (Micklin 2000, pp.13–23, 2004). Besides the consequences for the sea proper, a zone around the water body of several hundred thousand square kilometers with a population of several million has also been damaged (Khvorog 1992). The Republic of Karakalpakstan in Uzbekistan and portions of Kzyl-Orda Oblast in Kazakhstan have suffered the most harm. Turkmenistan, although not abutting on the sea, has one Oblast, Dashauz, that has been substantially impacted.

The substantial Aral fishing industries developed by Kazakhstan and Uzbekistan in the first half of the twentieth century ended in the early 1980s, as indigenous fish, which provided the basis for the commercial fishery, disappeared owing to rising salinity and loss of shallow spawning and feeding areas (Micklin 1991, pp. 49–50; 2000, p. 16; 2004; Williams & Aladin 1991; Zholdasova 1999; Ptichnikov 2002). However, fish still survive in the deltaic lakes and Amu Dar'ya and Syr Dar'ya rivers, except the Aral salmon (*Salmo trutta aralensis*), which has become extinct. The introduced kambala or Black Sea flounder (*Platichthys flesus lulscus*) is flourishing in the Small Aral and providing a sizable catch (unpublished observations and data gathered by the author during an expedition to the Aral Sea, August 22–September 23, 2005, funded by the Comm. Res. Explor., Natl. Geogr. Soc., Grant 7825–05). With the decrease of salinity from the North Aral level stabilization project, indigenous species such as the sudak or pike-perch (*Lucioperca lucioperca)* and sazan (*Cyprinus carpio*), a type of carp, should make a strong comeback and enhance the fishery, although the competition for food and the lowered salinity may decrease the numbers and catch of kambala.

Because of the loss of the fishery, tens of thousands of people were thrown out of work. Navigation on the Aral also ceased by the 1980s, as efforts to keep the increasingly long channels open to the major ports of Aral'sk at the northern end of the sea in Kazakhstan and Muynak at the southern end in Karakalpakstan became too difficult and costly.

The rich and diverse ecosystems of the extensive Amu Dar'ya delta, primarily located in the Karakalpak Republic of Uzbekistan, have suffered considerable harm (Micklin 1991, pp. 50–52; 2004). The Syr Dar'ya delta in Kazakhstan has endured lesser, but still substantial, damage. Greatly reduced river flows through the deltas, the virtual elimination of spring floods in them (owing both to reduced river flow and construction of upstream storage reservoirs), and declining groundwater levels caused by the falling level of the Aral Sea have led to spreading and intensifying desertification. Halophytes and xerophytes are rapidly replacing endemic vegetation communities (Novikova 1996, 1997). In some places, salts have accumulated on the surface forming solonchak (salt pans) where practically nothing will grow. Expanses of unique tugay vegetation complexes that formerly stretched along all the main rivers and distributary channels have been particularly hard hit. According to Dr. Novikova (1996), a Russian geobotanist, and her scientific colleagues in Karakalpakstan, tugay covered 100,000 hectares in the Amu Dar'ya delta in 1950, but shrank to only 20,000

to 30,000 hectares by 1999 (Severskiy et al. 2005). Tugay complexes around the Aral Sea are habitats for a diverse array of animals, including 60 species of mammals, more than 300 types of birds, and 20 varieties of amphibians.

Prior to 1960, more than 70 species of mammals and 319 species of birds lived in the river deltas. Today, only 32 species of the former and 160 of the latter remain (**http://www.ec-ifas.org/Russian_version/Aral_crises/flora_founa.htm**). A UNESCO (2000, pp. 44–46) report notes that of 282 bird species formerly observed in the Amu Dar'ya wetlands, approximately 30 have disappeared and approximately 88 are listed as rare. Desiccation of the deltas has significantly diminished the area of lakes, wetlands, and their associated reed communities. Between 1960 and 1980, the area of lakes in the Amu Dar'ya delta is estimated to have decreased from 49,000 to 8000 km^2 (Chub 2002, figure 3.3, p. 125). The area of reeds in the delta (as much as 500,000 hectares in 1965) also declined dramatically by the mid-1980s (Palvaniyazov 1989). This has resulted in serious ecological consequences as these zones provide prime habitat for a variety of permanent and migratory waterfowl, a number of which are endangered (Micklin 1991, p. 116). Diminution of the aggregate water surface area coupled with increasing pollution of the remaining water bodies (primarily from irrigation runoff containing salts, fertilizers, pesticides, herbicides, and cotton defoliants) adversely affected aquatic bird populations. Since the late 1980s, significant efforts have been made to restore wetlands, improve habitat conditions, and reduce pollution (Chub 2002, p. 125). A 1999 survey, for example, indicated that the area of reeds for the key lake/wetland in the lower delta (Sudochye) was 12,000 ha (V. Dukhovnyy, personal communication, June 23, 2003).

Consumptive use: a measure of water withdrawn for irrigation that is lost to evaporation (from conveyance canals, fields, and irrigation formed terminal lakes) and transpired from or incorporated into crops

Irrigated agriculture in the deltas of the Amu Dar'ya and Syr Dar'ya has suffered from an inadequacy of water as inflow to the deltas has decreased owing to heavy upstream consumptive use for irrigation. Additionally, water that does reach the deltas has elevated salinity from the leaching of salts caused by repeated usage in the middle and upper courses of the rivers (World Bank 1998, pp. 3–5). At times over 2 g/l, these saline flows have lowered crop yields and, in conjunction with inadequate drainage of irrigated fields, promoted secondary soil salinization. Animal husbandry, both in the deltas and desert regions adjacent to the Aral Sea, has been damaged by reduction of area and declining productivity of pastures resulting from desertification, dropping groundwater levels, and replacement of natural vegetation suitable for grazing by inedible species.

Strong winds blow sand, salt, and dust from the dried bottom of the Aral Sea, large portions of which are a barren desert, onto surrounding lands. Since the mid-1970s, satellite images have revealed major salt/dust plumes extending as far as 500 km downwind that drop dust and salt over a considerable area adjacent to the sea in Uzbekistan, Kazakhstan, and to a lesser degree Turkmenistan (Micklin 1991, pp. 48–49, 2004; Glazovskiy 1990, pp. 20–23; Ptichnikov 2002). Although dust/salt storms affect the entire zone surrounding the Aral, most of the major storms occur with north and northeast winds, which most seriously impact the Ust-Urt Plateau to the sea's west and the Amu Dar'ya delta at the south end of the water body (Bortnik & Chistyaevaya 1990, p. 27, figure 2.7). The latter is the most densely settled as well as economically and ecologically important region around the sea. Glazovskiy

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(1990, pp. 21–22), after analyzing estimates of the total deflated material (ranging from 13 million to as high as 231 million metric tons per year) that were made in the 1980s, concluded that the most probable figure was from 40 to 150 million tons.

Salts in dry and aerosol forms, the most harmful of which include sodium bicarbonate, sodium chloride, and sodium sulfate, settle on natural vegetation and crops, particularly in the Amu Dar'ya delta (Bel'gibayev 1984). In some cases, plants are killed outright, but more commonly, their growth (and for crops, yields) is substantially reduced. The salt and dust also have ill effects on wild and domestic animals by directly harming them and reducing their food supply (Palvaniyazov 1989). Local health experts also consider airborne salt and dust a factor contributing to high levels of respiratory illnesses and impairments, eye problems, and throat and esophageal cancer in the near-Aral region (Abdirov et al. 1993, Tursunov 1989). More recent field work by a British-led group indicates that salt and dust blowing from the dried bottom (and likely from irrigated farmland in regions adjacent to the Aral Sea) is laced with pesticides and heavy metals, which would enhance the negative impacts on humans and other animals (O'Hara et al. 2000).

Owing to the sea's shrinkage, climate has changed in a band up to 100 km wide along the former shoreline in Kazakhstan and Uzbekistan (Micklin 1991, pp. 52–53; Glazovskiy 1990, pp. 19–21). Maritime conditions have been replaced by more continental and deseritic regimes. Summers have warmed and winters cooled, spring frosts are later and fall frosts earlier, humidity is lower, and the growing season shorter. Uzbekistani climatological experts also believe that the increase in the levels of salt and dust in the atmosphere are reducing surface radiation and thereby photosynthetic activity, as well as increasing the acidity of precipitation (Chub 1998).

The population living in the so-called ecological disaster zone around the sea suffers acute health problems (Micklin 1992, Medicins sans Frontieres 2000). Some of these are direct consequences of the sea's recession (e.g., respiratory and digestive afflictions and possibly cancer from inhalation and ingestion of blowing salt and dust and poorer diets from the loss of Aral fish as a major food source). Other serious health-related problems result from environmental pollution associated with the heavy use of toxic chemicals (e.g., pesticides and defoliants for cotton) in irrigated agriculture, mainly during the Soviet era. Nevertheless, the most serious health issues are directly related to Third World medical, health, nutrition, and hygienic conditions and practices. Bacterial contamination of drinking water is pervasive and has led to very high rates of typhoid, paratyphoid, viral hepatitis, and dysentery. Tuberculosis is prevalent as is anemia, particularly in pregnant woman. Liver and kidney ailments are widespread; the latter is probably closely related to the excessively high salt content of much of the drinking water. Medical care is very poor, diets lack variety, and adequate sewage systems are rare.

Health conditions in the Karakalpak Republic in Uzbekistan are undoubtedly the worst in the Aral Sea Basin. Surveys conducted in the mid to late 1980s showed that rates of diseases such as cancer of the esophagus, tuberculosis, and various intestinal disorders had grown significantly compared to a decade earlier (Anokhin et al. 1991). The infant mortality rate, a basic indicator of general health conditions, rose from an average of 45/1000 live births in 1965 to 72/1000 in 1986, with the rate in several

districts adjacent to the former seashore ranging from 80 to over 100/1000. These are 3–4 times the national level in the former Soviet Union and 7–10 times that of the United States. Although efforts have been made in the post-Soviet period to improve health conditions here, there is little evidence these rates have declined substantially (Lean 2006).

Perhaps the most ironic and dark consequence of the Aral's shrinkage is the story of Vozrozhdeniya (Resurrection) Island. In the early 1950s, the Soviet military selected this, at the time, tiny, isolated island in the middle of the Aral Sea as the primary testing ground for its supersecret biological weapons program (Bozheyeva et al. 1999, Wijinsema 2000). From then until 1990, they tested various genetically modified and weaponized pathogens, including anthrax, plague, typhus, and smallpox, as well as other disease-causing organisms. These programs stopped with the collapse of the U.S.S.R. in 1991. Allegedly, the departing Soviet military took measures to decontaminate the island.

Since the 1960s, as the sea shrunk and shallowed, Vozrozhdeniya grew in size, and in 2001 it united with the mainland to the south as a huge peninsula extending into the Aral Sea (**Figure 5**). The fear is that some weaponized organisms survived and could escape to the mainland via infected rodents or that terrorists might gain access to them. In the early part of the new millennium, the United States contributed $6,000,000 and sent a team of experts to the former island to help the Government of Uzbekistan ensure the destruction of any surviving weaponized pathogens (Bioweapons' Cleanup 2002).

IMPROVEMENT EFFORTS

The Soviet Union launched Aral improvement programs in the late 1980s when that government finally admitted the existence of a serious problem (Micklin 1991, pp. 68–81). The fundamental aims, but not the major players, have remained remarkably consistent since that time: better medical and health services, greater access to safe drinking water supplies, improved food supplies, and diversification of the economy for the people living near the sea; mitigation of negative ecological trends in the delta of the Amu Dar'ya; and rebuilding irrigation systems to raise their efficiency to deliver more water to the Aral Sea.

After the collapse of the U.S.S.R. in 1991, the new states of the region (Kyrgyzstan, Uzbekistan, Turkmenistan, Kazakhstan, and Tajikistan) assumed responsibility for dealing with the Aral situation. In March 1993, the presidents of the five republics signed an agreement to promote cooperation in solving the key problems (Micklin 2004). It established the Interstate Council on the Problems of the Aral Sea Basin (ICAS). A major purpose of the new organization was to facilitate assistance from the World Bank and other international donors as well as assume responsibility for various Aral Sea Basin assistance programs. The presidents also created an International Fund for the Aral Sea (IFAS) with the responsibility to collect revenue from each basin state for financing of rehabilitation efforts. The ICAS was abolished in 1997 and merged its functions into a restructured IFAS. The leadership of IFAS rotates in a two-year cycle among the Central Asian Heads of State.

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Following independence, international aid donors began providing water resource management assistance in the Aral Sea Basin (Micklin 2004). The World Bank was the first major agency to become involved. In the early 1990s, the Bank cooperated with Aral Sea Basin governments to formulate an Aral Sea Basin Assistance Program (ASBP) to be carried out over 15 to 20 years. The initial cost estimate for this effort was set at 250 million USD, which was later increased to 470 million USD. The main goals of the program were (*a*) rehabilitation and development of the Aral Sea Disaster Zone, (*b*) strategic planning and comprehensive management of the water resources of the Amu Dar'ya and Syr Dar'ya, and (*c*) building institutions for planning and implementing the above programs. Afghanistan was invited to join the ASBP but did not respond to the overture (World Bank 1998, p. 9).

In 1996, the Bank did a major review to evaluate the strengths and weaknesses of the preparatory phase of the ASBP, which had cost $15 million USD (Micklin 2000, p. 49). Out of this review came a new effort known as the Water and Environmental Management Project. Funded jointly with the Global Environmental Facility (GEF) at a cost of 21.5 million USD, the program was implemented between 1998–2003 (World Bank 1998, pp. 19–34). In line with a new emphasis on regional responsibility for the ASBP, the Executive Committee of IFAS managed the program, with the Bank playing a cooperative/advisory role.

IFAS has carried on the leading role in the latest effort entitled "Program of Specific Actions for Improving the Ecological and Social Situation in the Aral Sea Basin from 2003–2010" (IFAS 2003). It includes a broad range of measures to improve health, welfare, and the natural environment, including efforts to conserve and restore the tugay vegetation and lands usable for pasture in the Amu Dar'ya and Syr Dar'ya deltas, to combat desertification, and to develop measures for preventing salt and dust transfer from the dried bottom of the sea.

A number of other international donors have contributed to Aral Sea region improvement. The United States Agency for International Development (USAID) funded the Environmental Policy and Technology (EPT) project, running from 1993 to 1998, which financed measures to improve drinking water supplies in the Amu Dar'ya delta, aided in the formulation and implementation of regional water management policies and agreements, and provided advice on water management issues to specific governments (Micklin 1998). A smaller-scale follow-up project in 1999 and 2000 provided further assistance. USAID initiated a new, major effort in 2001 known as the Natural Resource Management Project (NRMP). This is a five-year effort focusing on providing assistance to Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan, and, to a lesser extent, Tajikstan to improve management of water, energy, and land (Micklin 2004).

The European Union initiated a major aid program for the Aral Sea Basin states in 1995 known as the Water Resources Management and Agricultural Production in the Central Asian Republics Project (WARMAP) (Micklin 1998). Phase 1 and 2 were completed by mid-1997. Major accomplishments of this program were the development of a GIS-based land and water database for the basin, providing help to the World Bank and ICAS (now IFAS) in their efforts to improve and legally codify the 1992 interstate water sharing agreement among the new states of the basin and

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funding of training seminars and workshops, and an attempt to gather detailed data on irrigated water use at the farm level (World Bank 1998, pp. 8–9). The European Union has initiated follow-up programs to these efforts.

The United Nations has been providing assistance on the Aral Sea crisis since 1990 when a joint UNEP/Soviet working group on the Aral was formed (Micklin 1998). This aid has continued and expanded in scope in the post-Soviet era. UNESCO (United Nations Educational, Scientific and Cultural Organization) funded a research and monitoring program for the near-Aral region from 1992–1996 focusing on ecological research and monitoring in the Syr Dar'ya and Amu Dar'ya deltas (UNESCO 1998). The overall intent was to model the terrestrial and aquatic ecosystems of the study area to provide a scientific basis for implementation of ecologically sustainable development policies. The project relied mainly on the expertise of scientists and technicians from the Central Asian republics and Russia with limited involvement of foreign experts.

UNDP (United Nations Development Program) has also been very active in Aral Sea region activities (Micklin 2004). This organization has had two primary foci: strengthening regional organizations that have been established to deal with the Aral crisis and promoting sustainable development to improve conditions for the several million people who live in the so-called disaster zone adjacent to the sea. UNDP was instrumental in convincing the five Central Asian presidents to sign the Declaration of Central Asian States and International Organizations on Sustainable Development of the Aral Sea Basin in 1995, which commits the five states to pursue sustainable development in the management of land, water, biological resources, and human capital.

The North Atlantic Treaty Organization (NATO) has become involved in Aral Sea region activities through its Scientific and Environmental Affairs Division. The first NATO-sponsored event was an Advanced Research Workshop (ARW) on "Critical Scientific Issues of the Aral Sea Basin: State of Knowledge and Future Research Needs" held in Tashkent, Uzbekistan, during May 1994 (Micklin & Williams 1996). A second NATO ARW with an Aral theme took place in Wageningen, the Netherlands, in January 1995. The focus was on irrigation, drainage, and the environment in the Aral Sea Basin.

From 1995 to 2003, the NATO Science Division, primarily through its Science for Peace (SfP) Program, sponsored work to develop a land and water GIS for the Amu Dar'ya delta and Aral Sea (Ptichnikov 2000, 2002, 2002–2003). This system is intended to serve as a key tool for decision-making on land, water, and environmental management in the delta. The project cooperated closely with the government of Karakalpakstan to establish indigenous GIS capabilities through continuing development of a GIS center at Karakalpakstan State University in Nukus. The center serves as a training site for local specialists and scientists in GIS techniques and also operates a program for monitoring environmental conditions in the Amu Dar'ya delta and in the Aral Sea.

The SfP program has also supported another project to develop an environmentally appropriate water management regime, implemented through a decision support system based on GIS and a set of hydrologic models for the larger lakes/wetlands that

have been created or restored in the Amu Dar'ya delta (Scientific & Environmental Affairs 2003, pp. 189–190). This project involves cooperation between the Scientific Information Center of the ICWC in Tashkent and the private consulting firm Resource Analysis in the Netherlands.

THE FUTURE

What could the future hold for the Aral and its environs? Can the sea be returned to its pre-1960s level and size and the deltas of the Amu Dar'ya and Syr Dar'ya restored to their former ecological condition? If not, what improvement measures are rational and feasible to undertake.

Aral Sea Restoration

Assuming continuation of the pattern of basin withdrawals that has characterized the 1990s (the latest period for which we have data) and the pattern of more or less natural discharge from the mountain regions of flow generation that has characterized the years since the late 1950s, a conservative estimate of average annual discharge to the sea in the near and mid-term future (next 20–30 years) is 10 km^3 (Micklin 2000, p. 21; International Fund for Saving the Aral Sea 2004; Zholdasova 1999; Uzglavgidromet 1994–2003). Based on this figure, to restore the Aral to its average level (53 m) and size (67,000 km^2) during the first six decades of the twentieth century would require raising average annual discharge to the sea by approximately 46 km^3, or 450%, bringing total inflow to 56 km^3. This would necessitate a larger decrease in upstream withdrawals to compensate for natural losses of the net additions to flow before they reached the sea. In-stream losses have been estimated at 14%, which would require an additional 8 km^3 reduction in upstream use for a total of 54 km^3.

In a regional context, the only realistic means for substantially increasing inflow to the Aral is reducing the consumptive use of water for irrigation in the sea's drainage basin. The reason is simple: This water-intensive activity, conducted on approximately 7.9 million hectares and the basis of agriculture here, accounts for 92% of withdrawals and an even larger share of consumptive use (Ruziev & Prikhod'ko 2002). The largest irrigated hectarage in the basin is found in Uzbekistan and Turkmenistan; these two nations, respectively, account for 54% and 22% of all irrigation withdrawals (Micklin 2000, p. 37). It is irrigation that has depleted the flow of the Amu Dar'ya and Syr Dar'ya and led to the great reduction in discharge of these rivers to the Aral.

Irrigation in the Aral Sea Basin is inefficient. Substantial technical, economic, and institutional improvements to it could save considerable water. Attempts are underway to implement improvement measures, but the substantial and comprehensive program needed would be extremely costly and it faces concerted opposition from forces within governments and from segments of the public. Taking costs as an example: Complete renovation of irrigation systems on 6 million hectares could likely save 12 km^3 $year^{-1}$ but would cost at least 16 billion USD (Micklin 2004). To reach the maximum potential savings of 28 km^3 (based on technically, economically, and institutionally reforming irrigation on the "Israeli" model) would cost multiples more.

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These figures are far beyond the willingness and ability of the basin states, in combination with international donors, to pay. Furthermore, the technical condition of irrigation systems in the basin, far from improving, is steadily deteriorating owing to inadequate funding for, and lack of management responsibility over, operation and maintenance activities.

Converting more of the irrigated area to less-water-intensive crops (e.g., substituting grains, soybeans, fruits, and vegetables for cotton and rice) and reduction of the irrigated area are other means of significantly reducing water usage in irrigation (Micklin 2004). The former strategy is being employed. Between 1990 and 1998, the area of cotton as a percent of the total irrigated area dropped from 45% to 25% percent, while the area of winter wheat rose to 28%. (Dukhovnyy & Sokolov 1999). This probably was a major factor in the drop in irrigation withdrawals from 109 to 92 km^3 (16%) at the same time the irrigated area increased 10%. However, there are limits to such a program as the two primary irrigating nations (Uzbekistan and Turkmenistan) are intent on keeping cotton as a major crop because it plays a key role in earning foreign currency. Reductions in the irrigated area are unlikely in the near to mid-term future. All the former Soviet republics, except Kazakhstan, intend to expand irrigation, mainly to meet food needs for a growing population.

Thus, it is extremely doubtful that the Aral could be restored to its former grandeur in any foreseeable future. The amount of water that would need to be saved (51% of 1999 estimated withdrawals of 105 km^3) is far above even the most optimistic and costly scenario of water use efficiency improvements. Such a reduction in withdrawals could only be met by a major cutback in irrigation that would wreak economic and social havoc on the countries of the basin,

On the other hand, the often-cited claim that the Aral Sea will dry up completely sometime in the twenty-first century is, of course, utterly false. Even in the unlikely event that river inflow from the Amu and Syr Dar'ya were reduced to zero, there would still be substantial residual input of irrigation drainage water, groundwater, and snow melt and rain that would maintain a much shrunken but still sizable set of as many as five separate water bodies: the eastern and western basins of the Small Aral Sea in the north, and three lakes formed from the current Large Aral (eastern and western basins and Tsche-Bas Gulf). These lakes would be hypersaline and of little ecological or economic value, except, perhaps, for the production of brine shrimp (*Artemia*) eggs.

Of course it is feasible through engineering to bring water to the Aral Sea from outside Central Asia. During the latter part of the Soviet period, water managers in Moscow and in Central Asia proposed diversion of massive flow, up to 60 km^3, from Siberian rivers to the region as the panacea for perceived water shortage problems (Micklin 1991, pp. 60–68). The initial stage of this project would have taken 27 km^3 from the Irtysh-Ob river system in the Western Siberian region of Russia. It was on the verge of implementation when stopped by the Gorbachev regime in 1986. Although real and serious potential ecological threats (of regional, not global, magnitude as claimed by some opponents) were given as the chief reason for canceling the project, economic considerations were the fundamental factors in this decision (Micklin 1987).

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This grandiose scheme continues to be discussed and promoted in Central Asian water management and governmental circles and in the new millennium has, again, found a sympathetic ear among some water management professionals and bureaucrats in Russia, including Yuri Luzhkov, mayor of Moscow, and N.N. Mikheyev, the First Deputy Minister of Natural Resources (Mikheyev 2002, Polad-Zade 2002, Temirov 2003). However, implementation of this project in any but the far term, if ever, seems a pipe dream. Costs would be enormous, at least 30 billion USD, and even if Russia were willing to help finance the project, it is doubtful sufficient funds could be accumulated for construction (Temirov 2003). International donors, such as the World Bank, given their newfound sensitivity to environmental concerns, have stated opposition to such a project (Interfax Information Agency 2002). Finally, there is tremendous opposition among Russians to sending water from their precious Siberian rivers to Central Asia where, in their view, it would be wasted. Even if implemented, much less than the 27 km^3 diverted, probably less than 15 km^3, would reach the Aral owing to substantial evaporation and filtration losses in the transfer system, withdrawals along the route for irrigation and other purposes, and usage in Central Asia for irrigation. Certainly, it would be more rational to spend precious capital and effort on improving regional water management rather than importing water from Siberia (Kamalov 2003).

Mitigation Scenarios

Although restoration of the Aral to, or near, its pre-1960s level and ecological state is not viable in the foreseeable future, various partial rehabilitation scenarios for the sea and river deltas hold considerable promise. During August and September 2005, this author and Dr. Nikolay Aladin from the Zoological Institute, Russian Academy of Sciences, St. Petersburg, led an expedition, funded by the Committee for Research and Exploration of the National Geographic Society (Grant 7825-05), around both the northern and southern parts of the Aral Sea (**Figures 6** and **7**). Our purpose was to evaluate the ecological state of the sea and what it might portend for the future of this water body.

The Small Aral was in better shape than we had anticipated. Salinity levels were lower than expected (ranging from 3 g/l near the new Berg Strait dike to 24 g/l in the isolated Butakov Bay, with a rough estimated average for the entire water body of approximately 13 g/l). Dissolved oxygen levels were high everywhere and there appeared to be little evidence of any serious pollution. These positive factors contributed to a plentiful fish life, although, as noted above, mainly consisting of kambala (flounder) with two other species, sazan (carp) and sudak (pike-perch), making a strong comeback as salinity levels have decreased. We also were impressed by the number and diversity of aquatic birds (e.g., ducks, loons, swans), a positive indicator of ecological quality.

We mainly visited the western basin of the Large (southern) Aral Sea. Salinity levels were high, ranging from 70–80 g/l. Consequently, fish life was absent, but brine shrimp (A*rtemia*) and several kinds of benthos were present. The water was sparkling clear and appeared to be very clean. Hence, as discussed below, there is even hope for this portion of the sea.

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Figure 6

Nearly completed discharge gates for the dike across the former Berg Strait, August 2005. Photo by author.

What would the future Aral look like under the "conservative" future average annual inflow scenario of 10 km^3? The volume may reasonably be divided into 3.5 km^3 for the Small Aral from the Syr Dar'ya and 6.5 km^3 for the eastern basin of the Large Aral from the Amu Dar'ya. Flow of 3.5 km^3 to the Small Aral would allow maintaining its level at 42 m (the current maximum for the recently completed Berg Strait Dike)

Figure 7

Former cargo ship on the dried bottom of the Small Aral Sea, August 2005. Photo by author.

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and area at 3258 km^2 with release of excess flow of around 1.20 km^3 to the Large Aral. Average salinity could likely be maintained at 10–12 g/l, not much above levels prior to the beginning of the modern desiccation more than four decades ago. The North Aral Sea's ecology and fishery would not return to their earlier states, but they would significantly improve.

The eastern, shallow basin of the Large Aral would be maintained at about 29–30 m above sea level (it should fall to this level during 2006 or 2007), assuming 15% of the flow from the Small Aral reached the main part of this basin (much would be lost to high evaporation and transpiration in the extremely shallow flooded area south of the channel from the Small Aral to Large Aral seas). The western basin would be practically cut-off from the east, with a long, narrow, deep channel continuing to connect them and carrying a very modest amount of water from the eastern to western basin. The ultimate level and size of the western basin would largely depend on net groundwater inflow, which is not known with any degree of accuracy, but the level and area would decrease considerably from the current figures. The average salinity of the eastern basin would probably drop from its current level of >100 g/l owing to essentially no flow from it to the western basin (meaning that nearly all the "fresh" inflow from the Amu Dar'ya would be retained here). However, salinity would certainly remain above 70 g/l, too high to support any fish species. Because of the cut-off of nearly all flow from the east to west basin of the Large Aral, the west basin would continue on the path of hypersalinization, steadily moving toward conditions characteristic of the Great Salt Lake in the United States and the Dead Sea in the Middle East (200–300 g/l). Only brine shrimp *(Artemia)* and some bacteria could survive such harsh conditions.

There are, however, more optimistic scenarios for the future Aral. **Figure 8** shows a possible scenario developed by this author using data from his water balance model (Micklin 2004). It is based on concepts first put forward by L'vovich & Tsigelnaya (1978) almost 30 years ago. For the Small Aral Sea, it assumes average annual inflow from the Syr Dar'ya of 4.5 km^3, which in fact was exceeded for the period 1990–2004, when discharge averaged 5 km^3. The level of this water body could be raised and stabilized at approximately 47 m and the area expanded to ~4300 km^2. The new level would be only 6 m below the 53 m mark that is considered the average for modern predesiccation conditions. This would bring the shoreline of the Small Sea close enough to Aralsk, the major port city at the north end of the Aral, to allow rehabilitation of the earlier built channels connecting the city to the sea. This would be a boon to the fishing industry allowing large commercial fishing vessels that

Figure 8

One scenario of the Aral Sea in 2025. Small Aral Sea: level: 47 m; area: 4310 km^2; volume: 46.5 km^3; river inflow: 4.5km^3; outflow toward Large Aral: 1.4 km^3, salinity: 7.59 g/l. Large Aral Sea, western basin: level 33 m; area 6203 km^2; vol. 85 km^3; river inflow 7.35 km^3; outflow to eastern basin 3.05 km^3; salinity 45 g/l by 2025, 21 g/l by 2050. Large Aral Sea, eastern basin: level 28.7 m, Area 5710 km^2; vol. 21 km^3; inflow from western basin 2.95 km^3; inflow from Small Aral 1.03 km^3, hypersaline (>200 g/l?).

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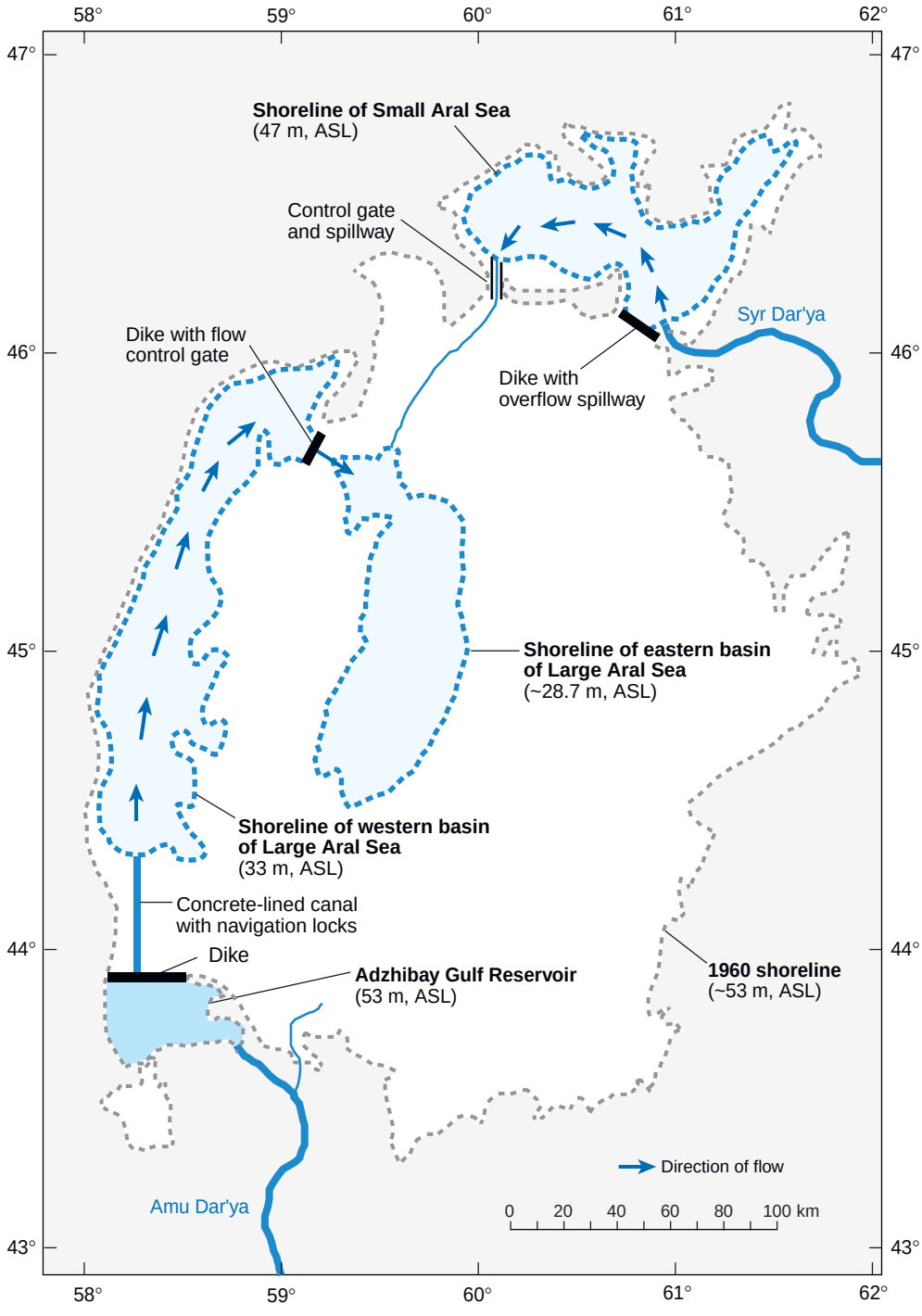

could bring their catches to the city access to the sea and permitting reopening of the large fish cannery. General sea-borne commerce could also be resumed as well. There would be some improvement of fishery conditions from a further reduction of salinity. Flow from the Small to Large Sea would be, on average, approximately 1.4 km^3 $year^{-1}$.

Of course, such a plan requires careful benefit/cost and environmental evaluation. It would be expensive as a much longer and higher dike across the former Berg Strait would be required as well as reconstruction of the discharge facility. As shown on **Figure 8**, it might make sense to move the main discharge facility to the western end of the Small Sea, as this would be optimal for controlling salinity for the whole water body.

Figure 8 also shows a possible rehabilitation scheme for Large Aral. It would require a modest increase in inflow from the Amu Dar'ya. Annual average flow for 1990–2004 was around 7 km^3; the project would require somewhat more than 8 km^3. This should be easily obtainable, as it would require only minimal improvements in irrigation efficiency in the basin of the Amu Dar'ya. Nearly all of the residual flow of the Amu (after meeting needs of deltaic lakes and wetlands, described below) would need to be directed northeastward into the former Adzhibay Gulf refilling it to 53 m. The current channel that takes some river water to maintain a lake on part of the dried gulf could probably be deepened and widened to accomplish this. A restored Adzhibay Gulf would improve the local climate, be of great ecological value to migratory and nonmigratory birds and aquatic mammals, and could become a major fishery.

On average, a little more than 7 km^3 $year^{-1}$ of water from the Adzhibay reservoir would be released via control gates to a channel connected to the western basin of the Large Aral Sea, maintaining a level of approximately 33 m and area a little over 6000 km^2. The channel would need to be lined with concrete or clay to reduce filtration losses. A dike with discharge gates would be built across the Kulandy Strait at the north end of the basin. Outflow to the eastern basin would average approximately 3 km^3 $year^{-1}$. The western basin would gradually freshen as more salt is carried out of the reservoir than is brought in, first allowing stocking with salt-tolerant fish (e.g., kambala) and, later, if salinities could be brought below 15 g/l, with endemic species such as sazan and sudak. It is likely that density stratification (already reported for the basin, see Kostianov et al. 2004), which creates a layer of saline water on the bottom and less saline on top, would enhance this process and allow development of a valuable fishery again.

This alternative has been little studied so cost estimates are highly speculative, although it would likely be much more expensive than the project to rehabilitate the small Aral Sea. Also, the range of potential negative environmental consequences is unknown (e.g., would the shrinking eastern sea leave a much larger salt desert that would significantly aggravate the problem of salt/dust storms?) Also, this option would eliminate the possibility of commercially raising brine shrimp in the western portion of the Large Aral, as salinities would be far too low.

Rehabilitation and partial preservation of the lower Amu Dar'ya delta and its wetlands has been a priority since the late 1980s, first by the Soviet government and

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subsequently by the new states of Central Asia and international donors. The prime objective of the most recent program, known as the Aral Sea Wetland Restoration Project (ASWRP), which was implemented by the International Fund for the Aral Sea and funded by the Global Environmental Facility, has been partial ecosystem rehabilitation through creation of artificial ponds and wetlands in the delta and on the dry bed of the Aral Sea (IFAS 2000, pp. 19–23). Specific benefits of lake/wetland restoration are enhanced biodiversity, improved fisheries, greater forage production, treatment of wastewater by aquatic vegetation, and some reduction in salt and dust transfer from the dried sea bottom to arable lands (Aral Sea Basin Sustainable Development Commission 1998, pp.59–81). A companion measure is the revegetation/reforestation of parts of the dried bottom to stabilize them and lower their deflation potential. With the completion of parts 1 and 2 of the project, some 73,000 hectares enjoy improved conditions for both flora and fauna.

The aggregate cost of parts 1 and 2 was 6 million USD. Experts have estimated that 4–5 km^3 of water (mainly relatively clean river flow supplemented by irrigation drainage) are needed to support minimally acceptable hydro-ecological conditions in the lower delta of the Amu Dar'ya, including the natural and artificially created lakes and wetlands (Intergov. Coord. Water Manag. Comm. 2002, p. 39). The remaining flow could be used to support the rehabilitation project for the Large Aral Sea described above.

A wild card in any attempt to design reasonable future scenarios of the Aral Sea is anthropogenic climate change. So-called global warming from elevated levels of greenhouse gases in the troposphere, chiefly CO_2 from the combustion of fossil fuels, is likely already underway and will increase in magnitude with time according to the overwhelming majority of experts. Although regional climate change is more difficult to decipher, Dr. V. Chub (2002, pp. 62–106) an expert on the climate of Central Asia and director of the Main Administration for Hydrometeorology in Tashkent, Uzbekistan, believes a general warming of 0.5 to 3.5°C is possible in different regions of the Aral Sea Basin by 2030 compared to the base period of 1961–1990. This would lead to longer, hotter summers with increased crop water needs and heightened irrigation requirements, which could reduce aggregate water savings from irrigation improvements and reduce inflow to the Aral Sea. On the other hand, some climate models indicate that the flow of the Amu Dar'ya and Syr Dar'ya could be increased somewhat by enhanced precipitation and melting of glaciers in the mountain zones of flow formation (Chub 2002, pp. 106–115). However, this increase would be at most 10% and unsustainable as the rate of melt of the glaciers would exceed their replenishment. Other models show substantial decreases of these rivers' flow.

SUMMARY POINTS

1. The Aral Sea has suffered severe desiccation since the 1960s owing to the expansion of irrigation in its drainage basin that has substantially reduced river inflow to this water body.

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2. By 2006, the sea's level had dropped 23 m, the area shrunk by 74%, the volume decreased by 90%, and the salinity of the southern part of the sea raised more than 1000% to more than 100 g/l.
3. The sea and deltas of its influent rivers have suffered enormous ecological, environmental, and economic damage that has adversely affected the local population.
4. In its last years, the government of the Soviet Union started programs to cope with the ecological, environmental, and human problems associated with the drying of the Aral Sea.
5. After the collapse of the U.S.S.R., the governments of the new states of Central Asia, in cooperation with international donors, have continued programs to improve the situation.
6. Full restoration of the sea in the foreseeable future appears impossible.
7. However, there is definitely hope for the Aral as evidenced by the recent and (apparently) successful project to partially rehabilitate the separated northern part of the sea and programs completed and underway to improve the ecology of the lower Amu Dar'y delta.

FUTURE RESEARCH DIRECTIONS

1. There needs to be long-term monitoring of ecological/environmental changes in the North Aral Sea to evaluate the success of the restoration project and to provide "feedback" on how such efforts might be improved.
2. Research is needed on the Large (southern) Aral to see if it is worthwhile to attempt partial rehabilitation of the western basin by channeling the residual flow of the Amu Dar'ya into it.
3. Assuming continued salinization of the Large Aral, the potential of commercial-scale brine shrimp (*Artemia*) egg production here needs further research.
4. The "new" water balance of the Aral Sea needs to be carefully studied, as it was during the Soviet era. Modern technologies (e.g., satellite imagery and other remote sensing techniques) offer great promise in this effort, particularly where on-site measurements are not feasible.

LITERATURE CITED

Abdirov CA, Agadzhanyan NA, Vervikhvost AV, Primbetov KP, Severin AY, et al. 1993. Stress reaction of healthy children of Nukus from the effects of ecological

Annu. Rev. Earth Planet. Sci. 2007.35:47-72. Downloaded from arjournals.annualreviews.org
by University of Utah - Marriot Library on 04/08/09. For personal use only.

factors in Priaral'ye. *Vestn. Karakalp. Otdel. Akad. Nauk Resp. Uzb.* 2:15–20 (In Russian)

Agrawala S, Barlow M, Cullen H, Lyon B. 2001. *The Drought and Humanitarian Crisis in Central and Southwest Asia: A Climate Perspective*, IRI Spec. Rep. No. 01–11. Palisades, NY: Int. Res. Inst. Clim. Predict. **http://iri.columbia.edu**

Anokhin YA, Borisov VA, Kulikova IL, Surnin VA, Bobonikova TE. 1991. The concept and results of implementation of regional monitoring. In *Monitoring the Natural Environment in Basin of the Aral Sea*, ed. LL Lentovskaya, pp. 208–14. Leningrad: Gydrometeoizdat (In Russian)

Aral Sea Basin Sustain. Dev. Comm. 1998. Training course. In *Reference Book*, pp. 6–10. Tashkent, Uzbekistan

Asarin A, Bortnik V. 1987. *Annual Data on the Aral Sea Water Balance 1926–85*. Inst. Water Probl., USSR Acad. Sci.Hydro Facil. Des. Inst., Gidroproyekt (compiled data)

Bel'gibayev MY. 1984. A dust/salt meter—an apparatus for entraining dust and salt from air currents. *Probl. Osvoyeniya Pustyn*. 1:72–74 (In Russian)

Bortnik VN, Chistyaevaya SP, eds. 1990. *Hydrometeorology and Hydrochemistry of the Seas of the USSR. Vol. VIII: Aral Sea*. Leningrad: Gidrometeoizdat (In Russian)

Most comprehensive treatment of state of Aral Sea up to 1985, with many detailed tables, figures, and appendices.

Bortnik VN. 1996. Changes in the water-level and hydrological balance of the Aral Sea. See Micklin & Williams 1996, pp. 25–32

Bozheyeva G, Kunakbayev Y, Yeleukenov D. 1999. *Former Soviet Biological Weapons Facilities in Kazakhstan: Past, Present, and Future*. Occas. Pap. No. 1, June. Monterey, CA: Monterey Inst., Cent. Nonprolif. Stud.

Chub VY. 1998. Regional problems of estimating the influence of aerosols (of anthropogenic and natural occurrence) on the climatic characteristics of the Central Asiatic region. In *Materials for the Regional Scientific Seminar Aeolian Transport of Salt in the Aral Sea Basin*, pp. 3–4, March 4–5. Tashkent, Uzbekistan: Exec. Comm. Int. Fund Save Aral Sea, World Bank, Main Admin. Hydrometeorol. Uzbekistan (In Russian)

Chub VY. 2002. *Climate Change and Its Influence on the Natural Resource Potential of the Republic of Uzbekistan*. Tashkent: Glavgidromet (In Russian)

Glazovskiy NF. 1990. *The Aral Crisis: Causative Factors and Means of Solution*. Nauka: Moscow (In Russian)

Greenberg I. 2006. As a sea rises, so do hopes for fish, jobs, and riches. *New York Times*, April 6:A4

Int. Fund Sav. Aral Sea (IFAS). 2000. *Projects of the Aral Sea Basin Program Recommended for Implementation*. Tashkent: Uzbekistan

Int. Fund Sav. Aral Sea (IFAS). 2003. *Program of Specific Actions for Improving the Ecological and Social Situation in the Aral Sea Basin from 2003–2010*. Dushanbe: Tadzhikistan (In Russian)

Interfax Inf. Agency. 2002. World Bank not to fund Uzbek project to get water from Siberia, Aug. 19

Izrayel' YA, Anokhin YA. 1991. Issues of estimating the ecological, social and economic consequences of the degradation of the natural environment in the near

Annu. Rev. Earth Planet. Sci. 2007.35:47-72. Downloaded from arjournals.annualreviews.org
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Aral region. In *Monitoring the Natural Environment in the Basin of the Aral Sea*, ed. LL Lentovskaya, pp. 4–6. Leningrad: Gidrometeoizdat (In Russian)

Kamalov Y. 2003. The Aral Sea: The legends, the problems, the solutions. *Ecostan News* 10/1(Jan.-Febr.): 9–10

Khvorog GV, ed. 1992. *Ecological Map of the Near Aral Region*. Alma-Ata: Kazakhstan (In Russian)

Kostianov AG, Zavialov PO, Lebedev SA. 2004. What do we know about dead, dying and endangered seas. See Nihoul et al. 2004, pp. 1–49

Lean G. 2006. The dead sea that sprang to life. *The Independent*. **http://www.independent.co.uk**

L'vovich MI, Tsigel'naya ID. 1978. Managing the water balance of the Aral Sea. *Izv. Akadi. Nauk SSSR Ser. Geogr*. 1:42–58

Médecins sans Frontières. 2000. *MSF in Uzbekistan and Turkmenistan*. Act. Rep. 1999–2000. Tashkent: Uzbekistan

Micklin P. 1987. The fate of 'Sibaral': Soviet water politics in the Gorbachev era. *Cent. Asian Surv*. 2:67–88

Micklin P. 1990–2006. Excel-based physical water balance model developed by Philip Micklin to calculate annual level, area, and volume for the Small and Large Aral seas for 1987 onward using Soviet and post-Soviet data on river inflow to the sea (corrected for estimated losses between the gauging stations and the sea), estimates of flow from the Small to Large Aral, estimates of net groundwater inflow, sea bathymetry, NASA MODIS satellite imagery of the Aral, and monthly sea level data for 1993–2005 provided to the author by Jean-Francois Cretaux, Geophys. Ocean Topogr., Toulouse, Fr.

Micklin P. 2004. The Aral Sea crisis. See Nihoul et al. 2004, pp. 99–125

Micklin PP. 1991. *The Water Management Crisis in Soviet Central Asia: The Carl Beck Papers in Russian and East European*, Stud. No. 905. Pittsburgh: Cent. Russ./East Eur. Stud.

Micklin PP. 1992. The Aral crisis: Introduction to the Special Issue. *Post-Sov. Geogr*. 33(5):269–83

Micklin PP. 1996. Introductory remarks on the Aral Issue. See Micklin & Williams 1996, pp. 3–8

Micklin PP. 1998. Regional and international responses to the Aral crisis. *Post-Sov. Geogr. Econ*. 39(7):399–417

Monograph with comprehensive coverage of main water management issues in the Aral Sea basin and desiccation of the the Aral Sea.

Micklin PP. 2000. *Managing Water in Central Asia*. Central Asian and Caucasian Prospects. London: R. Inst. Int. Aff.

A collection of excellent papers on main scientific issues related to drying of Aral Sea.

Micklin PP, Williams WD, eds. 1996. *The Aral Sea Basin. Proc. Adv. Res. Workshop, Tashkent, Uzbekistan, May 2–5, 1994*, NATO ASI Ser. 12. Heidelberg: Springer-Verlag

Mikheyev NN. 2002. Water without limits. *Melior. Vodn. Khoz*. 1:32–34 (In Russian)

Intergov. Coord. Water Manag. Comm. 2002. Bull. No. 3, 31, Aug. (In Russian)

MODIS Rapid Response System. 2006. *Real Time*. **http://rapidfire.sci.gsfc.nasa.gov/realtime**

Nihoul JCJ, Zavialov PO, Micklin PP, eds. 2004. *Dying and Dead Seas: Climatic vs Anthropic Causes*, *NATO Sci. Ser. IV: Earth Environ. Sci.*, Vol. 36. Boston: Kluwer

Annu. Rev. Earth Planet. Sci. 2007.35:47-72. Downloaded from arjournals.annualreviews.org
by University of Utah - Marriot Library on 04/08/09. For personal use only.

Novikova N. 1996. The Tugai of the Aral Sea Region is dying: Can it be restored? *Russ. Conserv. News* 6:22–23

Novikova N. 1997. *Principles of Preserving the Botanical Diversity of the Deltaic Plains of the Turan. Scientific Report for the Doctoral Degree in Geography*. Moscow: Inst. Water Problems (In Russian)

O'Hara SL, Wiggs GFS, Mamedov B, Davidson G, Hubbard RB. 2000. Exposure to airborne dust contaminated with pesticides in the Aral Sea region. *Lancet* 355:627–28

Pala C. 2006. Once a terminal case, the North Aral Sea shows new signs of life. *Science* 312:183

Palvaniyazov M. 1989. The influence of dust storms on the habitats of certain mammals of the coastal zone of the Aral Sea. *Probl. Osvoyeniya Pustyn*. 1:55–59 (In Russian)

Polad-Zade PA. 2002. Thoughts about the management of water resources in Central Asia: Past experience and modern realities. *Melior. Vodn. Khoz*. 1:34–37 (In Russian)

Ptichnikov A, ed. 2000. *Sustainable Development of Ecology and Land and Water Use through Implementation of a GIS and Remote Sensing Center in Karakalpakstan*. Bull. 1, NATO Sci. Peace Proj. 974101. Uzbekistan: Mocow (In Russian)

Ptichnikov A, ed. 2002. *Sustainable Development of Ecology, Land and Water Use through Implementation of a GIS and Remote Sensing Centre in Karakalpakstan*. Bull. 3, NATO Sci. Peace Proj. 974101. Uzbekistan: Moscow (In Russian/English)

Ptichnikov A, ed. 2002–2003. *Sustainable Development of Ecology and Land and Water Use through Implementation of a GIS and Remote Sensing Center in Karakalpakstan*. Bull. 4, NATO Sci. Peace Proj. No. 974101. Uzbekistan: Moscow (In Russian/English)

Ruziev MT, Prikhod'ko VG. 2002. Evaluation of the future of sustainable development of the governments of the Aral Sea basin with the help of model calculations. *Melior. Vodn. Khozyaystvo* 1:54–57 (In Russian)

Sci. Environ. Aff. 2003. *NATO/OTAN. 2002: Science for Peace: SfP Progress Report No. 4*. Brussels: Belgium

ScienceScope. 2002. Bioweapons cleanup. *Science* 295(5555):603

Severskiy I, Chervanyov I, Ponamorenko Y, Novikova NM, Miagkov SV, et al. 2005. *Global International Waters Assessment (GIWA) 24, Aral Sea*. Univ. Kalmar, Swed., UN Environ. Progr.

A detailed, recent report by a team of experts on the contemporary state of the Aral Sea.

Shivareva S, Ponenkova Y, Smerdov B. 1998. Modeling the level of the Aral Sea. In *Problems of the Aral Sea Basin, Research, Projects, Proposals*, pp. 5–10. Tashkent: Chinor ENK (In Russian)

Temirov R. 2003. Lobbying grows in Moscow for Siberia-Uzbekistan water scheme. *Eurasianet*, Febr. 19. **http://www.eurasianet.org/departments/environment**

Tursunov AA. 1989. The Aral Sea and the ecological situation in Central Asia and Kazakhstan. *Gidrotekh. Stroit*. 6:15–22 (In Russian)

UNESCO. 1998. Ecological research and monitoring of the Aral Sea deltas, a basis for restoration, Aral Sea Project 1992–1996. *Final Sci. Rep.* Paris, UNESCO

Excellent compendium of a broad array of scientific research related to the Aral Sea and its river deltas carried out in the 1990s.

UNESCO. 2000. *Water-Related Vision for the Aral Sea Basin for the Year 2025*. Paris: UNESCO

Uzglavgidromet. 1994–2003. *Hydrologic and other data acquired by Philip Micklin from 1994–2003 from Uzglavgidromet [Main Administration of Hydrometeorology for Uzbekistan]* in Tashkent,Uzbekistan

Wijinsima P. 2000. Deadly Soviet legacy threatens fishing village. *De Volkskr*. 31 March (Engl. transl.)

Williams WD, Aladin NV. 1991. The Aral Sea: Recent limnological changes and their conservation significance. *Aquat. Conserv. Mar. Freshw. Ecosyst*. 1:3–23

World Bank. 1998. *Aral Sea Basin Program (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan)*. Washington, DC: Water Environ. Manag. Proj.

Zholdasova IM. 1999. Fish population as an ecosystem component and economic object in the Aral Sea basin. In *Creeping Environmental Problems and Sustainable Development in the Aral Sea Basin*, ed. M Glantz, pp. 204–24. Cambridge: Cambridge Univ. Press

Zholdasova IM, Pavlovskaya LP, Urasbaev AN, Adenbayev E, Lubimova SK. 1999. Biological Bases of Fishery Development in the Waterbodies of the Southern Aral Region. See UNESCO 1998, pp. 213–15

RELATED RESOURCES

Int. Fund Sav. Aral Sea (IFAS). *Use of water resources*. **http://www.ec-ifas.org/Russian_version/Aral_crises/water_use** (In Russian)

Int. Fund Sav. Aral Sea. (IFAS). *Flora and Fauna*. **http://www.ec-ifas.org/Russian_version/Aral_crises/flora_founa.htm** (In Russian)

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WESTERN RESOURCE
ADVOCATES

July 9, 2009

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Via Email shellyandrews@utah.gov, wdamery@utah.gov

Re: Comments on Division of Water Quality 401 Certification Process Relative to U.S. Army Corps of Engineers Evaluation of the Great Salt Lake Minerals Proposed 91,000-acre Expansion of Solar Evaporation Reservoirs on Great Salt Lake (SPK-2007-00121)

Dear Walt and Shelly,

Thank you for this opportunity to comment on the Division of Water Quality (DWQ) 401 Certification Process relative to U.S. Army Corps of Engineers (Army Corps) evaluation of the Great Salt Lake Minerals Proposed 91,000-acre Expansion of Solar Evaporation Reservoirs on Great Salt Lake (Mining Company Expansion Proposal). I make these comments on behalf of FRIENDS of Great Salt Lake, National Audubon Society, Wasatch Audubon Society, Great Salt Lake Audubon Society, Utah Waterfowl Association, Utah Airboat Association, Utah Rivers Council, League of Women Voters of Salt Lake, League of Women Voters of Utah, Utah Chapter of the Sierra Club, Western Wildlife Conservancy and Physicians for a Healthy Environment (collectively "FRIENDS"). We hope that as you examine the significant water quality impacts of the Mining Company Expansion Proposal, you will consider the following.

I. Introduction

The local, national and international value of Great Salt Lake, its islands, and its wetlands cannot be overstated. Overall, 257 avian species use the Great Salt Lake ecosystem. Of these, 112 species are exclusively associated with the Lake's varied wetland areas, while 117 species reportedly nest on the Lakes periphery or on its islands. At least 33 species of shorebirds representing 2 to 5 million individuals use Great Salt Lake annually, stopping along routes that take them elsewhere in North, Central or South America. In addition, up to 5 million waterfowl migrate through the Lake each year.

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Approximately 30 percent of the waterfowl migrating along the Pacific Flyway depend upon the Great Salt Lake wetlands. For these migrants, the Lake provides a critical food supply, allowing them to restore depleted energy reserves and fuel up for the rest of their migrations, sometimes doubling their body weight before they leave. In recognition of its role in these international flights, Great Salt Lake is designated as **one of only eight** sites with a "hemispheric" designation – as opposed to regional or international designation – of the 40 Western Hemisphere Shorebird Reserve Network sites in the United States.

The importance of Great Salt Lake to the birds of the Americas is borne out by the sheer numbers that depend on its resources, including

- 60 to 80 percent of the world's population of Wilson's phalaropesp;
- One of the two largest staging concentrations of eared grebes in North America;
- The world's largest breeding population of white-faced ibis and California gulls;
- Over half of the entire breeding population of snowy plovers west of the Rocky Mountains;
- More than three quarters of the entire western population of tundra swan;
- One of the three largest breeding colonies of American white pelicans; and,
- One of the ten largest wintering populations of bald eagle in the lower 48 states.

Not surprisingly, hundreds of thousands of bird watchers comb the shores of Great Salt Lake to be rewarded by incredible views of feeding, flying and nesting birds that journey thousands of miles to gorge on the bounty of our nation's largest inland "sea." The Lake also attracts recreationists enjoying other water-based activities such as sailing, boating, rowing, floating, wading and kayaking. Others hike, ride horseback and mountain bike to enjoy scenery, solitude and wildlife. Great Salt Lake also supports a robust community of waterfowl enthusiasts who not only enjoy hunting but are working to preserve and protect Utah's s waterfowl, its unique and rich habitat and its rich heritage.

The North Arm of Great Salt Lake is an area of particular significance to the Lake's ecosystem. Commenting specifically on the Mining Company expansion proposal, the Utah Division of Wildlife Resources (DWR) and the U.S. Fish and Wildlife Service (FWS) noted that the North Arm of Great Salt Lake becomes critical to migratory and other waterbirds during high water years. Exhibits 1 & 2, attached. This is because, during these times, the salinity in the North Arm best supports brine shrimp – an important food source for many of the Lake's birds. *See* DWR Comments at 2-3 (documenting the crucial importance of the North Arm to wildlife during the 1980s and early 1990s); July 19, 2007 Letter from Don Paul to Mr. Styler and Mr. Buehler at 2, Exhibit 3, attached ("During periods when the GSL elevation occurs between 4193 and 4206 feet above sea level (asl), there are several aquatic bird species that occur at the Lake in continental and hemispheric numbers of importance at the GSL and largely in the Gilbert Bay. These are the Wilson's Phalarope, Red-necked Phalarope, and the Eared Grebe. Some years these populations are in excess of 1,200,000, and 1,300,000 respectively during their seasonal occurrence at Great Salt Lake.

At times, these numbers of Wilson's Phalaropes and Eared Grebes represent 50 to 70% of the population that occur in the world.");[1] Great Salt Lake Mineral Leasing Plan at 33 ("[D]uring the high water years from 1983 to 1987, there were increase populations of brine shrimp in the north arm as salinity decreased [and] . . . eared grebes followed the brine shrimp into the north arm, abandoning sites along the Antelope Island causeway . . .").

As recognized by the Utah Legislature, the North Arm is of significant importance as a refuge for one of the last remaining populations of the American white pelican, which breeds on Gunnison Island.[2] In addition, the North Arm offers outstanding recreational opportunities. This unique and remote area is enjoyed for its stark beauty, wildlife and bird life and stunning landscapes. That this area is more difficult to access and less frequented than the South Arm does not diminish its significant recreational and aesthetic value. Moreover, although navigation to and from this area is currently impeded by the causeway, there is no reason to believe that this obstruction is permanent[3] and every reason to believe that the demand for access to this area will increase.

Likewise, Bear River Bay and the Willard Spur are of outstanding value for both recreation and wildlife habitat. Here there is a fishery that persists when the lake elevation is higher than 4,200 feet above sea level of vital importance to pisciverus birds. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake.

Recognizing these values, DWR has underscored the tremendous ecological importance of the lease parcels the applicant proposes to develop:

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[1] Mr. Paul also states: "This was the case in the high lake years of the 1980s (1983 to 1988). The migratory populations of Phalaropes and Eared Grebes were totally reliant upon Gunnison Bay for the food and energy reserves needed to complete their annual winter migrations which sometimes exceed 2,000 miles. Much of the foraging of these species took place along the west shorelines of promontory point, around Gunnison Island and west toward the Hogup Mountains (the ostensible GSL Minerals diking and ponding site), (DWR SLO files)." Exhibit 3 at 2.

[2] Utah Code Ann. § 23-21a-2 ("The legislature of the state of Utah recognizes that the number of breeding sites of the American white pelican has been reduced from in excess of 50 prior to 1932 to only seven major sites in 1976 as a result of the removal of water barriers around breeding sites, loss of food supply, and **human disturbance of nesting colonies.** The legislature of the state of Utah further recognizes that Gunnison Island in the Great Salt Lake, one of the seven remaining pelican rookeries in North America, produces over 20% of the world's population of the American white pelican, and is the only remaining major pelican rookery that does not have refuge status. It is hereby declared to be the policy of the state of Utah that areas that will support certain threatened life forms shall be preserved for their benefit and for the benefit and enjoyment of present and future generations of people.") (emphasis added).

[3] The causeway has stood only since 1959, when it replaced a trestle built in 1902.

> These lands . . . are valued by DWR for periods when lake level falls below 4200' in Bear River Bay. DWR is particularly interested in lands which are north and northwest of the existing dikes . . . because of bulrush colonies in this area that are important to colony nesting birds and as forage for birds. Also, at lower lake levels, this is the low point of the channel and is important as an area where the water creates a natural lake within the bay.

IMC Kalium/DWR Memo, August 28, 1998, Exhibit 4 at 3. Moreover, this area of the Lake receives high levels of recreational use, is appreciated for its scenic beauty by many, and is critical to navigation of the Lake. Bear River Bay and Willard Spur enjoy a high number of days of recreational use. Air boat operators and others access this area though a public access site and two guiding services also operate in the area. There are at least two private duck clubs that are located along the shore of this area.

II. The Mining Company Expansion Proposal

Mining Company currently operates about 47,000 acres of evaporative ponds in the northern part of Great Salt Lake; 25,000 acres of ponds in the North Arm and 22,000 acres of ponds in Bear River Bay. North Arm brine is transported to Bear River Bay via the 21-mile Behrens Trench, taking a week to make the journey.

In 2007, Mining Company proposed expanding their operations by 33,000 acres. The proposed expansion would have consisted of an 18,000-acre pond adjacent to Gunnison Island, a 7,000-acre pond in the southern end of Clyman Bay and an 8,000 pond in Bear River Bay. While the lease for the 8,000 acre Bear River Bay portion was purportedly already approved by the Division of Forestry, Fires and State Lands (Division) prior to the proposal, the necessary leases for the 25,000 acres of ponds in the North Arm were also approved by the Division in July, 2007. Subsequent to that approval, the Army Corps began the Environmental Impact Statement process associated with the 404 permit for the entire 33,000 acres.

Subsequent to approval of the required leases by the Division but prior to approval by the Army Corps, Mining Company expanded that proposal to 91,000 acres – of which 80,000 acres fall within the confines of the Lake. The new proposal is in place of, rather than supplementing, the 2007 proposal. Of the 91,000 acres 83,000 acres would be located in the North Arm and 8,000 acres would be added to the northeast portion of Mining Company's current Bear River Bay facilities.

To support this expansion, Mining Company has also applied for 336,360 additional acre feet of water rights taken from the North Arm and 16,640 acre feet of water taken from Bear River Bay. Currently, Mining Company holds 156,000 acre feet of consumptive water rights within the Lake as well as 67,000 acre feet of water rights in Bear River Bay. Because the railroad causeway substantially reduces the interchange between the South and the North Arms, the withdrawals of water from the North Arm proposed by Mining Company will have a disproportionate impact on that portion of the Lake. This is especially true at lower Lake levels, when the effectiveness of the causeway breach is minimized. Adding to the impact is the

purported lack of recurring maintenance of the two culverts by the railroad. As a result, and absent the effects of the proposed evaporation reservoirs, the withdrawal of this water from the North Arm will have an enormous and uneven effect on that portion of the Lake because of the North Arm's hydrologic isolation from the rest of the Lake.

In addition, the majority of the proposed 91,000 acres of new evaporation reservoirs will fall outside of the natural boundary of the Lake at normal water levels. In other words, both because the reservoirs are close to the shore and because Mining Company proposes to withdraw a huge amount of water from the main body of the Lake to sequester in these reservoirs, the main body of the Lake will shrink below natural levels and the sequestered water will be spread out over tens of thousands of acres, largely, if not completely above the main body of the Lake. As a result, the company's proposal artificially expands the surface area of the Lake and, thus, will result in an increase in the natural rate of evaporation and a significant draw down of water volume in the Lake.

III. Legal Framework

A. Water Quality Law

Before the Army Corps can authorize the discharge of dredge and fill for the Mining Company Expansion Proposal under Section 404 of the Clean Water Act, Section 401 of the Act requires Mining Company to obtain certification from DWQ that the planned activity will comply with all applicable requirements of federal and state water quality law, including Utah's Water Quality Standards. Utah Admin. Code r. 317-2 (2009). DWQ must verify, first, under 401(a), that any discharge of dredge and fill material associated with the Mining Company's planned 91,000 acres of industrial facilities, largely on the bed of Great Salt Lake, will comply with state water quality standards and, second, under 401(d), that "any effluent limitations and other limitations, and monitoring requirements necessary to assure that" Mining Company will adhere to any other applicable discharge requirements under the Act, and with "any other appropriate requirement of state law." 33 U.S.C.A. §1341(a) & (d) (1977). Section 401(a) thus requires DWQ to certify the legality of the discharge of dredge and fill in the process of building and maintaining dikes and other facilities, and section 401(d) requires certification regarding all of Mining Company current and proposed construction and operation activities, including the sequestration of waters of the United States, the discharge of bitterns during the reservoir flushing process and the discharge of any other wastes that may be released as part of the construction and extraction processes.

In keeping with the requirements of the Clean Water Act, the State of Utah has classified all the waters within its boundaries and designated beneficial uses for each class. The water quality standards consist of narrative and numeric water quality criteria, as well as antidegradation requirements. DWQ must, at all times, guarantee that all beneficial uses of water are sustained.

Except for the recent promulgation of a water quality criterion for selenium, DWQ has not assigned any numeric water quality standards for the Lake.[4] The State has classified the Great Salt Lake as a Class 5 waterway. Utah Admin. Code r. 317-2-6.5, dividing the Lake into five distinct sections, each with unique beneficial use designations. The sections of the Lake directly affected by the proposed discharge and related activities are Gunnison Bay (5B) and Bear River Bay (5C). The water quality standards for each of these sections are as follows:[5]

R317-2-6.5b Class 5B Gunnison Bay

Geographical Boundary – All open waters at or below approximately 4,208-foot elevation north of the Union Pacific Causeway and west of the Promontory Mountains, excluding salt evaporation ponds.

Beneficial Uses – Protected for primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

R317-2-6.5c Class 5C Bear River Bay

Geographical Boundary – All open waters at or below approximately 4,208-foot elevation north of the Union Pacific Causeway and east of the Promontory Mountains, excluding salt evaporation ponds.

Beneficial Uses – Protected for primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

The Lake as a whole, including Gilbert Bay (Class 5A), Farmington Bay (Class 5D), and Transitional Waters along the Shoreline of the Great Salt Lake Geographical Boundary (Class 5E), have similar designated uses as above. While not directly affected, these sections of the Lake and their designated uses may also be impaired to the extent that the proposed expansion will result in lower lake levels, concentration of pollutants, and the loss of beneficial uses in those sections.

The Utah Water Quality Standards also include an antidegradation policy for purposes of compliance with EPA's antidegradation regulation. EPA regulation requires that:

> (a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:
>
> (1) Existing instream water uses and the level of water quality necessary to protect the **existing uses shall be maintained and protected.**

[4] The selenium standards went into effect January 12, 2009. Utah Admin. Code r. 317-2-14 (Table 2.14.2). However, the standard has not been approved by the U.S. Environmental Protect Agency (EPA).

[5] Again, these rules have not been approved by EPA.

> (2) **Where the quality of the waters exceed levels necessary** to support propagation of fish, shellfish, and wildlife and recreation in and on the water, **that quality shall be maintained and protected** unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. **Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control**. Antidegradation Policy, 40 C.F.R. § 131.12 (1992).

Utah's antidegradation regulation under R317-2-3 seeks to comply with EPA mandate through an antidegradation review under R317-2-3.5. For these purposes, Great Salt Lake as a whole is categorized as a Level III waterway, requiring an antidegradation analysis consisting of two levels of review. The first level review is "conducted to insure that existing uses will be maintained and protected" and if any degradation is *de minimus* in nature it does not require any further review. Utah Admin. Code r. 317-2-3.5b. If the impacts are not *de minimus*, the activity is subject to the second level review process. This requires determination of whether all statutory and regulatory requirements are met, if there are any reasonable less-degrading alternatives, whether the activity has economic and social importance, if the applicant has proposed any type of mitigation, water quality standards are met, existing uses are maintained and protected, and if the existing use is a higher use than the current designated use. Utah Admin. Code r. 317-2-3.5c. If the activity at issue requires a 404 permit, the State also requires there be a) a determination that the proposed activity discharges are unavoidable (i.e., necessary); b) examines alternatives to the proposed activity and authorizes only the least damaging practicable alternative; and, c) requires mitigation for all impacts associated with the activity. Utah Admin. Code r. 317-2-3.5c(3).

As stated above, except for the selenium standard, DWQ has not established numeric water quality standards for the Great Salt Lake or any of its subsections. While there is a narrative standard for the Lake and designated uses have been established, the lack of sufficient numeric standards requires the state to use other analytical methods to ensure that beneficial uses are adequately protected. It is therefore all the more crucial to evaluate whether the construction and operation the Mining Company Expansion Proposal will impair the designated uses. Section 401 requires the state to certify compliance with all components of water quality standards, not just numeric water quality criteria.

The United States Supreme Court confirmed this requirement in *PUD No. 1 of Jefferson County v. Wash Dept. Ecology*, in which an applicant argued that the state "may not require them to operate their dam in a manner consistent with a designated 'use'" but that "the state may only

require that the project comply with specific numerical 'criteria.'" 511 U.S. 700, 714 (1994). The court squarely rejected this argument, holding that the text of the Clean Water Act "makes it plain that water quality standards contain two components" and is "most naturally read to require that a project be consistent with *both* components, namely, the designated use and the water quality criteria." *Id.* at 714-15 (emphasis added). A project therefore "does not comply with the applicable water quality standards" if a project does not comply with the designated use. *Id.* at 715. The numeric qualifications often ensure the designated uses are protected, but are not determinative. *Id.* Compliance with numeric qualifications and protection of designated uses are completely independent analyses. *Id.* In regard to Great Salt Lake which does not have numeric standards, the protection of the designated uses must still be independently analyzed in relation to the proposal.

Based on the above, the proposed activity and discharge of the Mining Company expansion plan do not meet the requirements for 401 certification because a) the proposed discharge and its associated activities will impair if not destroy designated and existing uses in large portions of the lake, b) certification would improperly and unlawfully downgrade large portions of the lake from the current designated uses to none, in violation of EPA's WQS regulations and Utah's antidegradation rule; and c) the applicant's discharges of massive quantities of bitterns and other wastes back into the lake have not been shown to meet applicable CWA permitting requirements and effluent limitations.

B. The Public Trust Doctrine

In making determinations regarding water rights applications affecting Great Salt Lake, DWQ must abide by the Public Trust Doctrine, which requires the State of Utah to hold sovereign lands in trust for the benefit of the public. For purposes of sovereignty, and in fact, Great Salt Lake is a navigable water. *Utah v. United States*, 403 U.S. 9, 10 (1971). When Utah was admitted to the Union, the state succeeded to the United States' title to the beds of all navigable waters within its boundaries, including Great Salt Lake, under the equal footing doctrine. *Id.* at 9-10; see *United States v. Alaska*, 521 U.S. 1, 5 (1997) ("Ownership of submerged lands – which carries with it the power to control navigation, fishing, and other public uses of water – is an essential attribute of sovereignty.").[6]

These sovereign lands are afforded special status and shielded by the Public Trust Doctrine, which "protects the ecological integrity of public lands and their public recreational uses for the benefit of the public at large." *National Parks and Cons. Ass'n v. Bd. of State Lands*, 869 P.2d 909, 919 (Utah 1993). *See Illinois Cent. R.R. v. Illinois*, 146 U.S. 387, 455-56 (1892) (holding Public Trust Doctrine prevented Illinois legislature from divesting bed of Lake Michigan to private railroad); *see also, e.g., Marks v. Whitney*, 491 P.2d 374 (Cal. 1971);

[6] *See also* 43 U.S.C. §§ 1301 *et seq.* (2008) ("Submerged Lands Act"). With passage of the Submerged Lands Act in 1953, Congress "'confirmed' and 'established' states' equal footing rights to and interest in 'lands beneath navigable waters within the boundaries of the respective States.'" *United States v. Alaska*, 521 U.S. at 5-6 (quoting 43 U.S.C. § 1311(a)).

National Audubon Soc. v. Superior Court, 658 P.2d 709 (Cal. 1983); *Wade v. Kramer*, 459 N.E.2d 1025 (Ill. 1984); *Save Ourselves, Inc. v. Louisiana Envtl. Control Comm'n*, 452 So.2d 1154 (La. 1984); *Orion Corp. v. Washington*, 747 P.2d 1062 (Wash. 1987); *United States v. State Water Res. Control Bd.*, 182 Cal. App. 3d 82, 227 Cal. Rptr. 161 (1986). Under the Utah Constitution, at statehood the state accepted sovereign lands, including the bed of Great Salt Lake, "to be held in trust for the people . . . for the respective purposes for which they have been or may be granted." Utah Const. art. XX, § 1.

In accordance with the Public Trust Doctrine, the Utah legislature has directed the Division of Forestry, Fire and State Lands, the agency deemed responsible for managing sovereign land values for the benefit of the public, to administer all uses of sovereign lands in a way that "serve[s] the public interest ***and*** **do[es] not interfere with the public trust**." Utah Code Ann. § 65A-10-1 (2008) (emphasis added). Based on these principles, the Division's own rule recognizes "a public trust over and upon the beds" of the state's navigable waters, including Great Salt Lake. Utah Admin. Rule R652-2-200 (1991). The rule further mandates that the Division must manage these "basic resources of the state" for the "**protection of navigation, fish and wildlife habitat, aquatic beauty, public recreation, and water quality**." *Id*. (emphasis added).[7]

While the legislature has explicitly directed the Division to carry out the Public Trust Doctrine, the underlying principle applies equally to all agencies of the State whose management activities and decision making impact public trust values – the Utah Constitution requires all agencies of the State to ensure that sovereign lands are held for the people of Utah so that public trust values are conserved and private uses of sovereign lands do not interfere with this conservation. Utah Const. art. XX, § 1.

IV. The Proposed Discharge and Associated Activities will Significantly Impair Designated Uses of Great Salt Lake.

Mining Company's proposed discharges and associated activities will destroy both designated and existing uses of the Lake, in violation of both state water quality standards and EPA's water quality standards regulations. Under the Utah Water Quality Standards, as well as the Clean Water Act and applicable EPA regulations, designated uses of a water must be

[7] Rule 652-2-200 does suggest, somewhat problematically, a weighing of Public Trust values with economic values, such that an economic justification could trump protection of public trust resources. *See* Utah Admin. Code r. 652-2-200 (Public Trust values "balanced against the navigational or economic necessity or justification for, or benefit to be derived from, any proposed use"). However, such a reading of the rule would conflict with the Public Trust Doctrine generally and with § 65A-10-1 specifically. The latter commands that **no** use of sovereign lands may "interfere with the public trust." Utah Code Ann. § 65A-10-1. Under the plain language of the statute, any Rule R652-2-200 balancing must comply with § 65A-10-1 and ultimately ensure non-interference with and protection of navigation, fish and wildlife habitat, aquatic beauty, public recreation, and water quality.

protected as part of the maintenance of water quality standards. Designation of Uses, 40 C.F.R. § 131.10 (1992); UT Admin Code R317-2-7. In addition, Utah's antidegradation rule provides that "proposed activities can only be allowed if 'existing uses'[8] will be maintained and protected." Utah Admin. Code r. 317-2- 3.5c(7); *see, also*, 40 C.F.R. § 131.12. As stated in the water quality standards, the designated uses of the Bear River Bay and Gunnison Bay are "primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain," all of which are existing uses. Utah Admin. Code r. 317-2-6.5.

A. Destruction of Wildlife and Wildlife Habitat Use

Bear River Bay

1. Existing Wildlife Use as a Vital Habitat for Resident and Migratory Birds and Components of Their Food Chain

The Department of Natural Resources, in a special publication on the Avian ecology of the Great Salt Lake, has recognized the critical importance of the Bear River Bay to Waterbirds:

> Bear River Bay is the freshest region and receives the largest volume of riverine inflow. Its near-surface salinity is similar to that of the Bear River. This system is bounded on the north and east by state, federal, and private wetlands; on the south by industry; and to the west by the Promontory Mountains. This bay is fresh enough to support a community of submergent hydrophytes including sago pondweed (Potamogeton pectinatus) and widgeon grass (Ruppia maritima). There are significant islands of emergent wetlands here, especially in the east part of the bay in the Willard Spur. . . . An ecological element of vital importance to pisciverus birds in this area is the fishery that persists when the lake elevation is higher than 4,200 feet (1,280.2 m) above sea level. The avian community at Willard Spur is exceptionally complex. With its species richness, diversity and overall abundance, this area continually provides one of the most magnificent displays of bird life on the lake. Although the smallest region on the lake, it makes an exceptional contribution to the lake's avian population.[9]

The Utah Division of Wildlife conducted a multiple year survey documenting the use of the Lake by birds. *The Great Salt Lake Waterbird Survey*, conducted from 1997 to 2001,

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[8] EPA regulations define "existing uses" as "those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards." 40 C.F.R. § 131.3(e).

[9] *Avian Ecology of Great Salt Lake*, by Tom Aldrich and Don Paul from Great Salt Lake: An Overview of Change, edited by J. Wallace Gwynn, Ph.D., Special Publication of the Utah Department of Natural Resources, 2002.

underscored the importance of the Bear River Bay to waterbirds.[10] This survey was undertaken in 12 different areas of the total Bear River Bay complex, and occurred numerous times from early spring through fall during these five years. The Survey extensively documents the nature, magnitude, and importance of wildlife habitat and use of areas that will be directly affected by the proposed discharges, and should be consulted extensively by DWQ to document the extensive existing uses of this region that must be protected under both federal and state law.

The Great Salt Lake, notably the Bear River Bay has also been designated as a Globally Important Bird Area (IBA) by BirdLife International:

> The IBA Program purpose is to identify, monitor, and conserve a network of sites to help maintain naturally occurring bird populations for which a site-based approach is appropriate. IBA's are places of significance for the conservation of birds across multiple landscape scales. The program biological rationale is in recognition that some sites are exceptionally important for bird conservation. Therefore, the consequences of the loss or degradation of these sites may be disproportionately large.[11]

The *Great Salt Lake Waterbird Survey* and BirdLife International noted that there were fifteen species "recognized based upon having over 1% of the North American population at one time or 5% over a season" in the Bear River Bay.[12] The Long Billed Curlew has been labeled as a Global Species of Conservation Concern with Bear River Bay supporting 130 breeding individuals while the global criteria for the classification is 30 individuals.[13] In addition, the survey noted the following peak survey numbers of some of the birds: 89,395 American Avocet, 35,924 American White Pelican, 36,327 Black-necked Stilt, 26,042 California Gull, 16,632 Cinnamon Teal, 1,412 Forster's Tern, 29,073 Franklin's Gull, 200,818 Green-winged Teal, 26,203 Long-billed Dowitcher, 43,860, 43,860 marbled Godwit, 41,868 Tundra Swan, 4,412 Western Grebe, 190,000 Western Sandpiper, 57,615 White-faced Ibis, and 136, 305 Wilson's Phalarope. [14]

The Bear River Bay is an internationally recognized area for its environment suited for wildlife use. Because of the importance of this water body to wildlife habitat, particularly close examination of the impacts of the current and proposed expansion on ecosystem values must be undertaken.

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[10] Don Paul and Ann Manning, *Great Salt Lake Waterbird Survey*, (Utah Division of Wildlife Resources 2001).
[11] Keith Evans & Wayne Martinson, Utah's Featured Birds and Viewing Sites 3, (Utah Important Bird Area Program 2008).
[12] *Id*. at 179
[13] *Id.*
[14] *Id.*

2. Effects on Existing Wildlife Use as a Result of Proposed and Existing Mining Company Activities and Discharges.

Wildlife habitat, populations and individuals will be greatly impaired by Mining Company activities and discharges that will result in increased salinity, a drawdown of the lake, and reduction of important habitat areas, which in turn will impair existing wildlife uses of the Bear River Bay.

a. The expansion of Mining Company Evaporation Reservoirs will result in a significantly decreased area of the habitat shore birds and other water-oriented wildlife including the organisms that make up their necessary food chain.

Mining Company's proposal to sequester for industrial use 8,000 acres of Bear River Bay, in addition to the current 22,000 acres already covered by evaporation reservoirs in the bay, will entirely eliminate a significant habitat for shore birds and other water-oriented wildlife, including organisms that makeup their necessary food chain.[15] At average lake levels, Bear River Bay is 142,268 acres, so the existing and planned reservoirs would potentially occupy 21% of the area and considerably more when lake levels are low. The evaporation reservoirs contain extremely high concentrations of salts and are sterile – completely unable to support a plant or wildlife habitat. So, in expanding the reservoirs in the Bear River Bay, Mining Company is destroying the existing use of a substantial portion of the Bay. As noted above, the Bear River Bay has been recognized for its importance as a bird habitat. Given the importance of the Bay to numerous species, and given the Bay's beneficial use to support shorebirds and other water dependant wildlife, a 21% reduction in habitat would impermissibly destroy the existing use of the Bay.

b. The expansion of Mining Company's activities will result in a drawdown of lake levels thereby adversely affecting the use of the Bear River Bay as habitat for shore birds and other water-oriented wildlife including their necessary food chain.

Mining Company itself currently has the authority to take 230 cfs, or 156,000 acre feet, from the Lake each year. Mining Company has, as part of its expansion proposal, applied to the Utah State Engineer to appropriate an additional 353,000 acre feet of water from the Lake, including 16,640 acre feet directly from Bear River Bay. In addition, according to the Division, there are currently 11 perfected water rights to divert water directly from the lake totaling 362,306 acre feet a year. Great Salt Lake Comprehensive Management Plan Resource Document (Resource Document) at 13.[16] This use is consumptive. *Id.* The State Engineer has

[15] See maps showing dispersal of various species in the Bear River Bay in *Great Salt Lake Waterbird Survey* Appendix 5 (Species Accounts), Appendix 6 (Species Distribution by Survey Area), Appendix 7 (species at high and low lake elevations) – maps showing the dispersal of the various bird species in the Bear River Bay

[16] Available at http://www.ffsl.utah.gov/SovLands/gsl.php ("Resource Guide")

approved applications to appropriate an additional 444,562 acre feet of water per year from the Lake, also for consumptive use. *Id.* Finally, pending before the State Engineer are applications for 657,565 acre feet, largely if not completely for consumptive use, above and beyond Mining Company's current application for 353,000 acre feet of water. *Id*. Thus, appropriators are now entitled to consume a total of 806,868 acre feet of water from the lake each year – only slightly less than enters the Lake each year from **both** the Jordan and Weber rivers. *Id*. at 10. When the amount of water requested in pending applications is considered, the total water demands on the Lake reaches 1,464,433 acre feet a year – more water than flows from the Bear River into Great Salt Lake each year. In this context, Mining Company requests an additional 353,000 acre feet. This pending application would raise demands on Great Salt Lake water to 1,817,433 acre feet per year – 76% of the water that enters the Lake each year from all sources. If the Mining Company application is approved, appropriators would be entitled to siphon off 1.2 million acre feet of water from the Lake each year.

Plainly, DWQ must determine the adverse impacts that these water appropriations will have on water quality in Bear River Bay and ensure full protection of beneficial uses and compliance with water quality standards. At this point there has been little study or analysis available to the public on the effects of existing – much less proposed – withdrawals on water quality and beneficial uses of Bear River Bay. Declining water levels will concentrate pollutants, increase air pollution, decrease open water habitat, dry out wetlands and mudflats, and otherwise reduce available wildlife habitat, especially under low water conditions in an area already diminished by the evaporation reservoirs themselves.

c. Mining Company flushing will result in an increased salinity level in the Bear River Bay that will alter the delicate chemical balance that supports wildlife habitat.

As part of its operations, Mining Company flushes its evaporation reservoirs after it mines the desired materials and discharges very large quantities of unused brines ("bitterns") and potentially other waste material into the southern portion of Bear River Bay. Those discharges will increase significantly under expanded operations. The fate and effect of these discharges have not been studied, and the consequences of this activity are likely to change due to the further constriction and alteration of flow patterns between Willard Spur, Bear River Bay and Gilbert Bay due to the additional proposed diking. However, depending on circulation patterns at various times of the year, and under the highly variable hydrological conditions experienced in Great Salt Lake, there almost certainly will be an increased level of salinity in the Bay as a result of the flushing process of the evaporation ponds and discharge into the Bay. Gunnison Bay, from which Mining Company pumps water into their evaporation ponds, has an average salinity level between 24.3 to 25.7 percent, with its lowest level at 14.5 to15.3 percent during the high water years from 1982-87.[17] According to analysis done in the 1990s, the reason for this high concentration is that there is only a small quantity of fresh water inflow and large quantities of

[17] *Great Salt Lake Comprehensive Management Plan Resource Document* 38-39 (Utah Dept. of Natural Resources 2000).

salty south arm inflow.[18] Bear River Bay, on the other hand, into which Mining Company pollutants are discharged, maintains an upper layer of water containing only 1 to 2 percent salt and with a fluctuating tongue of salty water that moves through the bidirectional flow of water through the relatively small opening in the railroad causeway.[19] This increased salinity promises to disrupt the already delicate salinity balance in the ecosystem, affecting plant communities, aquatic organisms and the Bay's fishery, which in turn affects the use of the area as a wildlife habitat. The waterfowl that make use of the area rely on the plant life for food as well as for nesting and protection from predators, while the seasonal fishery is of vital importance as a food source. The ability of Bear River Bay to support a fish population is highly dependent on the direction of water flow and weather conditions and will be aversely impacted by increased salinity.

d. Additional pollutants, which have not been fully disclosed or studied, will accumulate in both the sediment and the water column affecting the food chain.

In addition to the known bittern discharge, the complete composition of the flushed materials is uncertain due to lack of studies and evaluation, or because the information has not been disclosed by Mining Company.[20] Preliminary information at the Army Corps scoping meetings suggests that there may be mercury, methyl mercury and other toxic pollutants in the discharges – pollutants which will accumulate in both the sediment and water column. These toxic materials have the potential for bioaccumulation or biomagnification in the Lake food chain, potentially affecting the entire web of life, from algae populations to wildlife populations.

e. Wildlife use will likely be impacted during construction.

The proposal to dike 8,000 acres of Bear River Bay is a huge construction process, requiring the use of heavy equipment and machinery and the disturbance and movement of tons of sediment and fill. This process will adversely impact wildlife that uses the area, especially from the noise generated, as well as from increased turbidity and other effects of the fill discharge itself. Recent studies have shown that "increased noise pollution may cause [wildlife] to alter their behavior and move to less-optimal habitat….most animals rely on hearing to communicate, avoid predators, and find food."[21] In addition to noise pollution, construction of the dikes and trenches will physically displace wildlife and habitat, disturb lake bed sediments and stir up contaminants, while the use of motors, motorized vehicles and other equipment as a result of the development could adversely impact water quality.

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[18] *Id.*
[19] *Id.*
[20] The discharges either are not monitored properly or assessed for chemical composition, or if they have been monitored, that data have not been released to the public. Section 308 of the Clean Water Act requires such data to be collected and made available to the public.
[21] Elizabeth Ann Johnson & Michael W. Klemens, Nature in Fragments 38 (Columbia University Press (2005).

f. Impacts of significant changes to the currents and water circulation, and water exchange between Bear River Bay and Gilbert Bay by narrowing the channel as evaporation ponds are expanded

Diking, industrialization and destruction of the Great Salt Lake Ecosystem impacts water quality because it interferes with the natural ebb and flow of the lake, as well as the mixing of the Lake's waters. This change in water quality in turn affects the food chain and the use of the area as a wildlife habitat. The significant proposed expansion of evaporation ponds in Bear River Bay would drastically constrict the flow and water exchange between Gilbert Bay and Bear River Bay, at best, leaving only a channel running parallel to Promontory Point. The nature and magnitude of effect this further constriction will have on Bear River Bay, and on the Lake as a whole, has not been studied properly or disclosed to the public. Given the effects the northern railroad causeway and other existing hydrological alterations of the system, this further restriction on the Lake will likely also have individual and cumulative effects that have not been studied adequately at this point.

g. Artificial dikes create predator corridors and allow access to parts of the lake formerly protected.

The dikes that are proposed as part of the evaporation reservoir expansion function as a corridor for predators to access remote parts of the Lake, that formerly would have been less or inaccessible. One of the reasons the Lake is an important migratory habitat is because the birds are sheltered from predators. The series of dikes, in conjunction with the draw down of lake levels, will work to open access to predators to additional areas of the Bear River Bay, limiting the parts of the Bay that still provide nesting and feeding habitat.

Gunnison Bay

1. Existing Wildlife Use

Gunnison Bay was recognized in the Great Salt Lake Waterbird Survey for its large bird populations, found chiefly on Gunnison Island and in Locomotive Springs Waterfowl Management Area, Salt Wells Flat Habitat Management Area, as well as along the west shore of the Bay. Gunnison Bay is recognized as a Globally Important Bird Area based on three species that use the area. Moreover, during years with significant freshwater runoff and/or high precipitation, Gunnison Bay provides crucial habitat for brine shrimp, brine flies and migratory and resident birds that take advantage of reduced salinity in the Bay. During these high water years, habitat in the south and east portions of the Lake are less suitable for these bird species than is Gunnison Bay.

Gunnison Island supports a large breeding colony of American white pelican. The number of birds exceeds 20,000 and constitutes over 11% of the North American population. California gulls also breed on the island, numbering over 23,000, which is about 4% of the estimated North American population. Gunnison Island provides high value habitat for pelicans

because it is isolated and safe from predators. It is an ideal nesting ground for these birds because they are very sensitive to disturbances during the nesting season. It provides an ideal isolated location, with access to a nearby food source in Bear River Bay.[22]

The long–billed curlew that breeds at Locomotive Springs and Salt Wells Flat is a Global Species of Conservation Concern. Locomotive Springs and the Salt Wells Flat also support populations of American avocets (over 400), black-necked stilts (over 180), and of special importance to Utah as a Utah Wildlife Action Plan priority species, the snowy plover (over 370).[23]

The Salt Wells Flat and the west shore of Gunnison Bay are also of extreme importance as a habitat for the snowy plover, which is also recognized as a Globally Important Species and is listed in the Utah Comprehensive Wildlife Conservation Strategy as a species of greatest conservation concern. Its numbers in the state have been steadily declining.[24]

2. Effects on Existing Wildlife Use as a Result of Proposed Mining Company Activities and Discharges

a. The use of water for the evaporation reservoirs will likely cause a substantial drawdown of the Lake affecting surrounding wetland, springs, and shoreline habitats.

As indicated above, Mining Company's current and proposed activities involve significant diversion of water from Gunnison Bay. Moreover, approved, but yet untapped water appropriations, as well as pending applications to appropriate water constitute an enormous claim on Great Salt Lake's water resources. Since Gunnison Bay is isolated from the rest of the Lake due to the Northern Railroad Causeway, the Bay will see the greatest loss in water. The first areas to be affected by this drawdown would be Locomotive Springs and the surrounding wetlands. As mentioned above, Locomotive Springs is an important nesting and breeding ground for wildlife. If these areas are dried up due to the drawdown, the areas will no longer be able to support wildlife use.

The drawdown will also further expose Gunnison Island and allow predator access. The Mining Company Expansion Proposal will expose the island to predatory access on a much more frequent basis, destroying any use by the sensitive pelican populations that rely on the isolation and protection of the Island.

Finally, the construction of the vast network of dikes in Gunnison Bay, as well as the maintenance and operation of the facilities, along with the loss of water and concentration of

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[22] *Id.*
[23] Keith Evans & Wayne Martinson, Utah's Featured Birds and Viewing Sites 177, (Utah Important Bird Area Program 2008).
[24] *Id.* at 52

pollutants in the Bay, promise to have adverse effects on wildlife and habitat. These activities will adversely affect water quality in the Bay, which further degrades habitat.

b. The expansion of the evaporation reservoirs in Gunnison Bay would substantially diminish wildlife habitat.

Currently Mining Company occupies 25,000 acres of industrial facilities in Gunnison Bay. The proposed expansion will increase the footprint of the company's industrial facilities to a total of 108,000 acres along the west side shore of the Bay. This is a substantial expansion into areas occupied by wildlife. As stated above, snowy plover and other bird species use these western mud flats and this area is of particular importance to additional bird species during high water years. Also as noted above, the snowy plover is internationally recognized as species characterized by declining numbers. A destruction of its habitat on the western shore will further jeopardize this species.

B. Destruction of Recreation Uses

DWQ has established as a beneficial use of Great Salt Lake, primary and secondary contact recreation. Great Salt Lake provides recreational activities for local, national and international visitors. The Lake is frequently used for boating, hunting, bird watching, study, photography, swimming and wading. The Mining Company Expansion Proposal will impair the use of the Lake for these purposes.

1. Boating

Boating is a popular activity on the Lake, including sailboats, airboats, kayaks, and canoes. Although access to the North Arm is limited, the area still attracts boaters, sightseers and other recreationists. The Bear River Bay is most frequented by airboaters for hunting access. In addition, there is economic reliance on the continued use of the area for airboats by manufacturers in the area and hired hunting guides that use the boats. The Utah Airboat Association has expressed its commitment to the preservation of the Great Salt Lake, especially the Bear River Bay area, because of their longstanding recreational use of the area:

> The Utah Airboat Association (known legally as Utah Air Boat Inc.) has a long history here in Utah. In the early 1940's, workers at the Bear River Migratory Bird Refuge in Brigham City built an airboat to help get around in the marsh. By the late 1950's there was a growing popularity of airboats in Utah and in the early 1960's a group of hunters decided to form an organization of likeminded individuals with airboats. The Utah Airboat Association was born out of the desire of these people to work toward wetland conservation as well as enjoying the hobby that they loved.
>
> Utah Air Boat Inc promotes the interests of airboating, cooperates with state and federal agencies for the enforcement of wildlife rules and regulations, and works toward conservation of wetlands and waterfowl. After the flooding of the 80's, the Utah Airboat

> Association started building nesting platforms for ducks and geese at several Waterfowl Management Areas in Utah. The last 3 years, UABI has joined together with the Utah Waterfowl Association in their duck nesting project at Farmington Bay WMA. The UABI supplies manpower, airboats and fuel to install and maintain duck and goose nesting structures. Each year, the Airboat Association performs service projects that have included lakefront debris cleanups, beach cleanups at Antelope Island, cleanup of Decker Lake, nesting structures, and boat ramp repairs/maintenance, including ramps located within state Waterfowl Management Areas. The Airboat Association has also been involved with spraying and control of the invasive species of Phragmites that is currently destroying the marsh along the Wasatch Front.
>
> There are a number of pressures that affect the Airboat Association's ability to recreate on the GSL, including the reduction of water inflows coming to the lake and its corresponding wetland complex, the phragmites invasion, and the loss of waterfowl habitat due to industrial development. The Airboat Association members have a deep love and concern for the Great Salt Lake and its marshes. With threats to the lake's complex ecosystem arising more and more frequently, airboaters feel it is vitally important to help protect this valuable and beautiful Utah resource.[25]

Boaters have a strong interest in the preservation of their uses in Bear River Bay. The pond expansion proposal in the Bay will greatly reduce their access and navigation in substantial parts of the Bay thus diminishing their existing uses of the area. Moreover, the water quality in the evaporation reservoirs will not sustain primary and secondary recreation.

2. *Hunting*

Hunting is a very popular activity in the fall in the Bear River Bay. As a major bird habitat, the Bay presents excellent recreational opportunities during hunting season for local and out of state hunters. Hunting guidebooks note the value and use of the Great Salt Lake as an ideal hunting ground for waterfowl, stating that "the one habitat which yields by far the most ducks and geese to Utah licensees is the east shoreline of the Great Salt Lake."[26] The area is frequently used during hunting season and a reduction in the wildlife habitat also means there is a reduction in the recreational use in the way of hunting.

Hunting along the shores of Great Salt Lake is popular activity with significant economic benefits. The proposed project will destroy 91,000 acres of Great Salt Lake wildlife habitat and areas previously open for hunting. In addition, these areas will no longer support primary and secondary contact recreation.

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[25] R. Jefre Hicks, Utah Airboat Assoc, http://www.gslcouncil.utah.gov/docs/AirBoat_Association_102908.pdf.
[26] Harrt Wixom, Fishing and Hunting Guide to Utah 206 (Lighting Source Inc 1999).

3. Bird Watching

Bird watching has become an increasingly popular activity, especially in Utah. Since 1999, Davis County Department of Community and Economic Development has been organizing the Great Salt Lake Bird Festival in response to the increase participation in birdwatching. The goal of the festival is "to increase conservation of the Great Salt Lake ecosystem through education and tourism."[27] Participation in festival activities, including seminars, workshops, and field trips focused on bird watching and bird species in the Great Salt Lake area, has steadily grown. In *Understanding Great Salt Lake Bird Festival Visitors: Applying the Recreational Specialization Framework,* Steven W. Burr and David Scott, point out the growing interest in bird watching and the importance of the Great Salt Lake:

> The growth of bird watching over the last two decades has been staggering. According to the recent National Survey of Recreation and the Environment (NSRE) (2000-2002), one-third (33%) of American adults said they went bird watching at least once during the previous 12 months. According to NSRE data, the number of people who regarded themselves as birdwatchers increased 27% between 1995 and 2001 and an incredible 225% between 1982 and 1991. Although most people watch birds exclusively in their yards, 40% of birdwatchers leave their homes to look at birds (U.S. Department of Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau, 2002). The economic impacts of bird watching are remarkable as well, with thousands of birders visiting birding "hotspots" and collectively spending millions of dollars during such outings, resulting in significant economic benefits locally (Crandall, Leones, & Colby, 1992; Kerlinger & Wiedner, 1994; Kim, Scott, Thigpen, & Kim, 1997; Eubanks, Kerlinger, & Payne, 1993). This has spurred community development and conservation leaders to develop festivals and special events attractive to birdwatchers. Today, there are approximately 200 bird watching and wildlife-watching festivals held throughout the United States and Canada (American Birding Association, 2001). One of these is the Great Salt Lake Bird Festival, which was established in 1999 and has experienced growth over the years in the number of visitors attending, with approximately 3,000 visitors attending in 2002 and 3,500 attending in 2003 (N. Roundy, personal communication, July 15, 2003).
>
> According the to the Great Salt Lake Bird Festival Organizing Committees (2003) promotional material, the September 2002 issue of Audubon Magazine listed the Great Salt Lake Birding Trails as some of America's best. The September/October 2002 issue of Bird Watcher's digest named the Great Salt Lake as one of the 25 North American birdwatching sites to visit. Sunset Magazine in November 2002 highlighted the U.S. Fish

[27] David Scott & Steven W. Burr, *Understanding Great Salt Lake Bird Festival Visitors: Applying the Recreational Specialization Framework,* Tourism Trends and Issues 201, 204 (2003).

& Wildlife Service's Bear River Migratory Bird Refuge, one of the field trip sites for the GSLFB, as one of the "Fantastic Five" top western birding destinations.[28]

Bird watching around Great Salt Lake is clearly on the rise. This activity generates significant economic benefits for the state as more visitors are attracted to the area. The proposed project will convert 91,000 acres of Great Salt Lake wildlife habitat with industrial facilities, as well degrade and destroy additional habitat.

V. Certification Would Unlawfully Destroy Great Salt Lake Designated and Existing Uses.

As discussed above, the proposed expansion would **entirely** eliminate the existing and designated uses of 91,000 acres of Great Salt Lake.[29] Those areas, currently used extensively by wildlife and for recreational uses such as swimming, wading, boating, hunting and wildlife viewing, would be diked off and converted exclusively for industrial use. Moreover, the effects of the proposed expansion would significantly impair existing and designated uses in other portions of the lake as well. As a result, certification of the Mining Company Expansion Proposal would violate EPA and state antidegradation requirements, and would constitute an unlawful downgrading of uses pursuant to the Clean Water Act and EPA regulations. By the same token the construction and operation of the 91,000 expansion will violate Utah's narrative water quality standard.

The fundamental objective Congress articulated in section 101 of the Clean Water Act is to "**restore and maintain** the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251 (emphasis added). As one method of implementing that objective, EPA requires states to adopt and to implement an antidegradation policy that strictly protects all existing uses: "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 C.F.R. §131.12(a)(1) (1993) (emphasis added). The Supreme Court in *PUD No.1 of Jefferson County* further pointed out that the EPA has explained that "no activity is allowable…which could **partially or completely eliminate any existing use**." *Answers on Antidegradation 3 (Aug.* 1985), *cited in PUD No. 1 of Jefferson County v. Wash Dept. Ecology*, 511 U.S. 718-19 (1994) (emphasis added). The Court pointed out that "states must implement their antidegradation policy in a manner 'consistent' with existing uses of the stream." *Id.* The Utah antidegradation policy, which follows the EPA regulation, states that "existing instream water uses **shall** be maintained and protected…no water quality degradation is allowable which would interfere with or become injurious to existing instream water uses." Utah Admin. Code r. 317-2-3.1 (emphasis added). According to the state regulatory language, existing uses must be maintained regardless of whether "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located." *Id.* If DWQ were to certify the Mining Company Expansion Proposal, it would thereby allow a significant part of the Lake to be converted into industrial

[28] *Id.* at 205

[29] For perspective, 80,000 lake acres is larger than all but 17 freshwater and saline lakes in the continental United States, excluding the Great Lakes.

facilities that do not support those existing uses. As a result "the existing instream water uses" will not be "maintained and protected," as specifically required by both the EPA and Utah regulations, and as recognized by the United States Supreme Court.

Moreover, certification of a project that would convert 91,000 acres of the Lake to a purely industrial use would constitute a *de facto* and unlawful downgrading of water body uses in violation of both the procedural and substantive aspects of EPA's regulation regarding designation of uses. 40 C.F.R. § 131.10 (e), (h). As stated in the Utah regulations and above, the lake has been divided into five parts and designated uses specified for each of those sections. Moreover, as documented above, each of these uses are "existing uses" as defined by EPA regulation, *id.* § 131.3(e), because they have been met on or after November 28, 1975. Utah's new rule that designates beneficial uses for Great Salt Lake specifically articulates that salt evaporation ponds are **not** included in the geographic boundaries of each section of the Lake. Therefore, any parts of the Lake occupied by new evaporation reservoirs would, *de facto*, be excluded from these boundaries. As a result, these waters of the Lake would no longer have "designated" uses and would no longer support designated and existing uses. A 401 certification of the expansion proposal would therefore unlawfully downgrade substantial portions of the Lake from the current designated uses to no beneficial uses.

EPA regulation provides: "Prior to adding or removing any use ... the State shall provide notice and an opportunity for a public hearing under § 131.20(b) of this regulation." *Id*. § 131.10(e). Moreover, the results of any such analysis must be submitted to EPA for review and approval, together with any accompanying use attainability analysis. *Id*. § 131.20(c). More important, even if the State were to act pursuant to the correct public process, EPA regulations would flatly prohibit the proposed downgrading because the designated uses being lost are existing uses: "States may not remove designated uses if: (1) They are existing uses, as defined in §131.3, unless a use requiring more stringent criteria is added[.]" *Id*. § 131.10(h). The State cannot accomplish through the backdoor of a section 401 certification what would be prohibited through the front door of a water quality standards revision conducted through the appropriate process. In any case, such a downgrade would plainly violate the Public Trust Doctrine.

VI. Mining Company's Current and Proposed Discharges Cannot be Certified as Meeting Applicable Clean Water Act Permitting Requirements and Effluent Limitations.

The Mining Company's discharges of bitterns and other wastes back into the Lake have not been shown to meet applicable Clean Water Act permitting requirements and effluent limitations. For a 401 certification, the Clean Water Act requires that "any certification provided under this section shall set forth effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with **any** applicable effluent limitations and other limitations." 33 U.S.C.A. §1341(d) (emphasis added). While the 401 certification is for the proposed dredge and fill activities and discharges, Mining Company is also required to show that any other discharges resulting from proposed project, or current operations, also meet the Act's permitting and effluent limitations requirements. The flushing process of bitterns and wastes into the Bear

River Bay from the evaporation reservoirs requires a UPDES permit and should be subject to all applicable technology-based and water quality-based effluent limitations. A 401 certification can therefore not be allowed until those UPDES requirements are met for the flushing process.

VII. Procedural Process at this Early Scoping Phase

This notice came early in the scoping phase. At this point there is insufficient information to allow the public to comment adequately on the water quality aspects of the project. Unless DWQ denies certification on purely legal grounds (as discussed above), an opportunity for additional comment should be provided at the Draft EIS stage when more information and analysis about the project and its impacts are made available.

In addition, absent an outright denial of certification, DWQ should state to the Army Corps that if DWQ plans to reserve judgment until later in the process, it is not implicitly waiving certification under the Army Corps permitting regulations. *See* 33 C.F.R. § 325.2(b)(ii).

VII. Conclusion

Wherefore, FRIENDS respectfully requests that DWQ refuse to certify the Mining Company Expansion Proposal because it does not meet federal and state water quality standards and because the plan otherwise fails to comply with applicable law and violations the Public Trust Doctrine. We also request that a public hearing be held while you consider the 401 certification and that we receive notice of these hearings.

/s/
JORO WALKER
Attorney for FRIENDS, et al.

From: I4X4wu@aol.com [mailto:I4X4wu@aol.com]
Sent: Wednesday, July 22, 2009 6:41 PM
To: Gipson, Jason A SPK
Subject: Great Salt Lake mineral expandsion

To Whom it may concern after reading Mr. Gibson's article and a life longs Weber County resident I feel his view could not be more wrong. I have belonged to a hunting club around Promontory for 30 years. There is a lot of waterfowl in that area. Further more any faster evaporation of the lake would have a considerable effect on the Bear River Bird Refuge. I would think his view is being secured by his use of fertilizer as a farmer instead of the
good the area for migrating birds. Thanks for your time. 142.1

RECEIVED
JUL 9 2009
JG

Chuck Kreher
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(801) 278-5555
kreher@comcast.net

July 07, 2009

Jason Gipson
Nevada- Utah Regulatory Branch
533 West 2600 South, Suite 150
Bountiful, UT 84010

Email, hard copy to follow

Re: Great Salt Lake Minerals Expansion Plans

Mr. Gipson,

Background: I am 73 years old and have sailed on The Great Lakes Lake for years. I am a former Commodore of The Great Salt Lake Yacht Club. I have probably spent more time on The Great Salt Lake than all the people gathered to testify on this proposal put together. I love the Great Salt Lake!

Environmentalist: The environmentalist live to complain. It doesn't matter what one does, or what one whats to do, the environmentalist can be counted upon to complain.

The Proposed Expansion: I have reread the objective article in the July 5th issue of the Salt Lake Tribune regarding the Salt Lake Mineral Company's proposed expansion plans. No one----no one uses the north end of the Great Salt Lake for recreation purposes! As far as people are concern, it is a barren waste land. Probably less than one percent of the Utah population or environmentalist have ever seen the areas that are currently used or proposed to be used by the mineral company. I know that I have not. This area is among 143.1

the most remote and desolate places in Utah. These areas are totally obscured from public view. The area behind Stansbury is a bug infested swamp. No one wants to camp out in this area. 143.1

Ninety-nine percent of the of the surface area of The Great Salt Lake well be left to us "Salty Sailors" and the birds. None of us will be effected, nor will any one else in Utah. Don't worry, the birds will survive, multiply and will continue to defecate on our sail boats! The birds are far more resourceful the the environmentalist give them credit. 143.2

Economics: Utah desperately needs high paying jobs. Currently we have 75,000 unemployed workers. That effects untold thousands of family members. Employee's earnings have a multiplier effect on our state's economy. We need every job passable to support our state's growing population. 143.3

In addition to the state income and sales taxes paid by these employees, and corporate taxes gained, Utah will benefit from the mineral extraction taxes. Collectively, these taxes can help support and hopefully improve our states education system. These additional taxes that will not have to be paid by individual citizens. 143.4

Eco System: Most forms of fertilizers require great amounts of heat to produce, thus effecting global worming. In this case, solar is used to extract the minerals. It is a perfect solution. What could be better? 143.5

Feeding the Hungry: Fertilizer is used to feed our people and those less fortunate around the world. The extracted salt can help keep our roads safe in the winter. 143.6

Win-Win: Yes, this is a win-win for all concern. God provided us with these abundant resources for our use. Yet, the environmentalist can be counted up to complain. Let reason prevail and approve of the proposed productive use of the Great Salt Lake. 143.7

Respectfully submitted,

Chuck Kreher

Chuck Kreher

P.S. In case it is ever questioned; I never met or know no one at Great Salt Lake Mineral Company, nor do I own any stock or have any financial interest in the company. My only interest is as an informed Utah citizen that want the best for his State and its people. The birds can fend for themselves!

The Nature Conservancy
Protecting nature. Preserving life.™

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Salt Lake City, UT 84102

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JUL 13 2009

July 9, 2009

Jason Gipson, Project Management
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010
Jason.a.gipson@usace.army.mil

Re: Comments on important scoping issues relative to Public Notice SPK200700121 – Proposed 80,000-acre Expansion of Solar Ponds on Great Salt Lake (Great Salt Lake Minerals).

Dear Mr. Gipson:

On behalf of The Nature Conservancy, I want to thank you for the opportunity to comment on the proposed action to dike approximately 80,000 acres of lake bed and shoreline habitat by Great Salt Lake Minerals in two locations on Great Salt Lake. It is an issue of great importance to the continued survivability of Great Salt Lake as a functioning ecosystem and we believe that a number of issues need to be addressed in a clear, sufficient and scientific manner before a project of this scale and permanence is decided upon by your agency.

Background

The Nature Conservancy is an international, non-profit conservation organization created in the 1950's that has been working on conservation projects in Utah since 1983. Our mission is "to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive." Utah's rich biodiversity status (5th among all states according to our scientists for rare species and natural systems) has made our work here both satisfying and especially compelling.

The Nature Conservancy has long recognized the Great Salt Lake ecosystem as likely the most important and biodiverse natural system remaining in Utah, and has been working for preservation of Great Salt Lake since 1983. One of our most visible efforts has been the purchase and establishment of the Great Salt Lake Shorelands Preserve in Davis County. This 4,200-acre protected area captures 11 miles of shoreline wetlands and uplands, and provides migratory and nesting habitat for tens of thousands of birds of dozens of avian species. The recently-completed Visitors Center, which includes a mile of boardwalk and a 30-foot viewing tower, provides access to and on-the-ground experience with Great Salt Lake for thousands of Utah citizens and schoolchildren each year. Millions of dollars over

the past 25 years have been invested in the acquisition, improvements and management of this preserve. The 11-mile interface between the preserve and the lake body is a very real, physical connection that creates vast areas of especially rich fresh/saline, brackish water habitat of great importance to both the Conservancy and tens of thousands of nesting and migrating birds annually. To change this relationship between our preserve and the lake body through artificially-lowered lake levels or other means as a result of this application could have serious consequences to the birds, our purpose and mission, and our investment of many millions of dollars.

The Corps' Responsibility for the Entire Lake System and Its Processes

For many years, The Nature Conservancy felt that consolidating the protection of wetlands and associated uplands in Farmington Bay was the principle contribution our organization could make to Great Salt Lake conservation. Roughly ten years ago, however, our science and program staff began to realize that while the preservation of significant wetland habitat could successfully be achieved, Great Salt Lake itself (and the beneficial uses that a healthy lake provides) might still be at serious risk of moving beyond the threshold of sustainability. The Conservancy then began a process of analysis and planning that revealed threats to the larger Great Salt Lake system that could possibly render the past good conservation work by all parties futile. The key components to the lake's natural, healthy-functioning system that are clearly at risk include: lake level fluctuation, salinity balance, water circulation, water quality and water quantity. **Because the proposed Great Salt Lake Minerals action would have an effect on Great Salt Lake health *at the ecosystem processes level*, we believe the Corps and other agencies with statutory/regulatory authority for maintaining the health of the larger lake body ecosystem must move forward only after conclusive scientific evidence that no harm will occur - not only to other beneficial uses or to the Gunnison Bay water body, but to the processes and functioning of the larger Great Salt Lake system.** 144.1

The Value of Great Salt Lake

Certainly, Great Salt Lake is a unique, important and growing area of interest for many Utah citizens (sailing, airboating, hunting, wildlife viewing, horseback riding, mountain biking, hiking, mineral extraction, brine shrimp harvest, and other activities).

Looking at it through the lens of biodiversity, one can only conclude that Great Salt Lake is a natural (and international) treasure. Not only does it provide a variety of uses for Utah citizens, but it has significance above and beyond our state. Because Utahns have the responsibility of managing this resource, we must recognize that "our" lake is a critical site in a hemispheric network of migratory wetland areas. We have obligations to other countries in South and Central America, to Mexico, Canada and to the millions of migratory birds that visit one country after another in their annual migratory patterns, to keep Great Salt Lake a permanent, sustainably-functioning "link" in the chain of migratory stopovers.

Describing the wildlife of the lake is an exercise in superlatives and astounding numbers.

Between 2 and 5 million shorebirds and roughly 4 million waterfowl depend on Great Salt Lake wetlands and habitat annually. In all, over 250 avian species rely on the Great Salt Lake system's healthy functioning – a system that includes the vast majority of all Utah's rare wetland habitat (approximately 400,000 acres). Recognized for its world-class wildlife numbers, the lake is officially designated a Western Hemispheric Shorebird Reserve Network site.

Both the Gunnison Bay and Willard Spur areas have high wildlife values – hosting millions of birds during fall migration and containing key habitat for waterfowl and shorebirds at all lake levels. In addition to habitat values existing currently in Gunnison Bay (one being the occurrence of the important population of breeding White Pelicans on Gunnison Island producing 20% of the world's population), this changeable lake area can support brine shrimp production at higher lake levels. The birds that follow this food source (Wilson's Phalaropes, Red-necked Phalaropes, and Eared Grebes) are critically dependent on this function when it occurs. Likewise, the Willard Spur area has extremely high wildlife values. Especially during low water years, the bulrush habitat in the area supports large numbers of colony nesting birds and foraging migrants. Any water removal and development proposals to these valuable aquatic, wetland, shoreline and lake bed areas need to be taken seriously, but the potential environmental effects of a proposal of this astounding size and impact require especially rigorous, scientific analysis.

The Great Salt Lake Minerals Application

In its scope and scale, this proposal likely ranks as the most potentially system-altering proposal for lake development of our generation. The twin GSL Minerals' proposals of new diking and water removal are essentially one proposal – neither can occur without the other and they each "allow" the other to happen if approved. It is difficult to determine whether the diking/construction permit triggers the appropriation of new water or vice versa – but these two applications should not be evaluated in isolation from each other due to the tremendous impact of the overall project. **We believe that the Corps must take into account key effects of the companion water rights application, as it relates to water quantity, water quality and other "system" impacts. It does not make sense to consider the merits of only the earth-moving aspects of the permit application, when it is common knowledge that evaporation pond construction will be followed by the removal of vast amounts of lake water.** 144.2

The permanent diking and sequestering of 80,000 additional acres of lake shoreland and lake bed into shallow, single-use evaporation ponds will not only totally destroy the existing function of the public land and water under its footprint, but will also likely influence the use of tens or even hundreds of thousands of other acres as its impacts radiate out into the lake aquatic ecosystem. For a project of this importance and size, every permitting agency should conduct exhaustive analysis of all possible scenarios, alternatives and impacts in order to protect the lands and waters held in trust for the people of Utah and the nation. We are not aware that this has occurred and outline below some key questions to be answered and areas of study be undertaken by the Corps as they consider this permit application. 144.3

Scale I: Issues That Should Be Addressed Relative to the Specific Application and Site

Wildlife/Habitat/Wetlands Issues

1) A collection of existing (or the initiation of new) monitoring studies such as the Great Salt Lake Waterbird Survey should be gathered and used to complete a systematic evaluation of all avian use of the project areas, and the importance of these areas to lakewide wildlife populations.	144.4
2) An analysis of studies or literature on the impacts of constructed dikes on nesting and foraging bird habitat should be completed.	144.5
3) The effects of noise, new roads and other infrastructure and increased pathways for predator access to avian nesting areas should be quantified.	144.6
4) Determine the impact to aquatic organisms both to the brine shrimp industry and to wildlife in the biological food chain, in Gunnison Bay and the greater lake.	144.7
5) Complete an analysis and determination of all potential impacts to the important White Pelican breeding population on Gunnison Island (water removal and lake level change, enhanced human and predator access by dike, dust, noise/light impacts, dike/pond attraction to young pelicans and gull and mammalian predators, among others).	144.8
6) The impact of losing up to 7 miles of shoreline breeding habitat for sensitive bird species such as the Snowy Plover.	144.9
7) Use current and accurate maps to determine a present-day impact as well as what is projected based on past lake rise and fall.	144.10
8) Determine the impact of the project on hydrologic patterns in the affected area.	144.11
9) Conduct an analysis of habitat importance and loss/gain during years of lake level fluctuation.	144.12
10) Complete an analysis of the loss of wetlands surrounding Great Salt Lake to date and how this proposal may affect avian populations.	144.13
11) Conduct an analysis of projected bird use of new ponds and the negative or positive impact of that use.	144.14

Scale II: Issues That Should Be Addressed Relative to the Integrity and Sustainability of the Larger Great Salt Lake Ecosystem

Development proposals for Great Salt Lake in the past have been evaluated as stand-alone projects with no relationship to other previous proposals and with no attempt to evaluate them as to their impact on the functioning of the larger lake body itself. In fact, if you try to determine what agency (state or federal) is responsible for the natural processes that sustain functioning of the overall lake system, you find no one assuming that role. It is our belief that both the State of Utah and federal agencies (Army Corps, EPA, USFWS) do have a clear obligation to protect the waters and lands that make up the entire Great Salt Lake water body. **Our recommendation, and the practical outcome of this responsibility, is that analysis of the impacts of individual proposals be conducted in relationship to previous actions approved, as well as their potential impact to the larger lake system and other legitimate beneficial uses – even if they are not in the immediate area of the proposed action.** Not to consider broader and cumulative impacts is to set the stage for a series of decisions that might easily rank with past decisions resulting in huge lake alteration with (in 144.15

hindsight) questionable or clearly negative impacts to the sustainable preservation of this magnificent publicly-owned treasure and all its beneficial uses.

Cases in point include the permitting and construction of the Northern Causeway and the Antelope Island Causeway. Probably the two most significant lake-altering actions taken since settlement, the permitting and construction of these causeways has drastically altered the natural functioning of Great Salt Lake. In the "North Arm", all the ecosystem-scale functions of the lake have been disturbed and degraded: lake circulation, salinity balance, water quality, water quantity and lake level fluctuation. Beneficial uses such as brine shrimp production, recreation, and maintenance of the natural lake plankton ecosystem were terminated, turning the public asset of this area of the lake into essentially a "single use", industrial production area. Likewise, the Antelope Island Causeway has eliminated nearly all natural exchange with the larger lake, resulting in nutrient, contaminant and habitat suitability issues. An analysis should be completed that will detail what the current proposal will do to further degrade or enhance the situation for all legal uses of the GSL water body – and through secondary effects, lake health and the lake's relationship to its shoreline (lake fluctuation, permanently-lowered lake levels, concentration of contaminants, etc.). 144.15

The State currently manages the lake under a "zoning" system – which implies that there are certain areas of the lake that are isolated enough from each other that actions can take place there without great effect on the rest of the lake and its beneficial uses. We know in reality, this is not the case – actions in one part of the lake, <u>especially at this great scale</u>, can and will have an impact on the entire lake system. All areas (and beneficial uses) of the lake are linked to each other – by water quality, water quantity, salinity balance, lake level fluctuation, lake circulation – and even by viewshed issues. **The current proposal will affect all other areas of the lake system – and these effects must be quantified in order to properly evaluate the proposed project.** 144.16

Water Quality/Water Chemistry

1) We know that human activities can have serious impacts on water quality – not only of the lake's tributaries, but of the aquatic lake body itself. For instance, Gunnison Bay's water chemistry has changed drastically since the construction of the Northern Causeway. We also know now that some of the highest mercury levels ever recorded in a U.S. waterbody were documented recently in the waters of Great Salt Lake. Additionally, the State of Utah is currently conducting the final scientific studies necessary to establish a numeric standard for selenium discharge and permissible occurrence levels within the body of the lake. How will this project affect Great Salt Lake water quality and water chemistry – and secondarily, what are its impacts to <u>organisms within the lake and its wetlands and the wildlife that consumes them?</u> 144.17
2) How will this proposal affect the water quality in the Gunnison Bay? Is it currently in compliance with the narrative water quality standards established by the state (or <u>standards required by the federal government, for that matter) for the lake?</u> 144.18
3) Will reduction in acres of habitat of the Bear River Bay system by the diked ponds <u>affect circulation, nutrient cycling, water flows and water quality?</u> 144.19
4) As the evaporative ponds concentrate minerals, will they concentrate contaminants and pollutants as well? Will these be returned to the lake system? Will the water 144.20-22

removal and sequestration contribute to the concentration of contaminants and pollutants in both Gunnison and Gilbert Bays?	144.20-22
5) Will the construction of the dikes themselves contribute to water quality degradation? How will this be quantified?	144.23
6) Construction of dikes will undoubtedly disturb lake sediment layers, likely re-suspending chemical and contaminant components (selenium, mercury) into the water column. What will this mean to water quality, to wildlife and the entire aquatic ecosystem?	144.24

Water Quantity

1) A determination must be made of the effects of major new evaporation surfaces and the pumped removal of large amounts of water itself (consumptive use) from the larger lake system – especially at naturally-occurring low lake levels. How will this potential lowering of lake elevation affect navigability (in Gunnison Bay, Bear River	144.25
Bay, and the rest of the lake)? Will it affect the connection with eastern shore	
wetlands (especially for our preserve)? Is there a threat of extremely low (or almost	144.26
no) water levels in the Gunnison Bay? What will the water removal do to the	144.27
exchange of water between Gunnison and Gilbert Bays? Will Gunnison Bay be a water "sink", draining water from Gilbert Bay and affecting the beneficial uses in	144.28
place there now? Will the opposite occur? Will there be a "permanent", artificial	
incremental lowering of entire lake level (no matter the water year) because of this application?	144.29
2) How will the loss of lake water evaporated be quantified? How will any remaining	144.30
residue be sequestered or returned to the lake and how will that affect Gunnison Bay and whole-lake chemistry?	144.31
3) It is our understanding that no monitoring or metering devices are in place currently for the existing large water withdrawals by GSL Minerals. How will the State and its citizens know with accuracy what is actually occurring with even larger withdrawals in the future?	144.32
4) Should removal of an additional 353,000 acre-feet occur, will lake level be reduced and the lake body retreat from the shoreline (again, from our preserve area), thus opening up large sovereign lands mudflats to the rapid growth of the aggressive invasive *phragmites*? History has shown that though private landowners surrounding the lake may be able to somewhat control *phragmites* on their own property, the adjacent growth and spread of *phragmites* on newly-exposed sovereign land lake bed renders most private, expensive control work temporary at best.	144.33

Lake Level Fluctuation

1) At the proposed locations, these structures will be vulnerable to the effects of wind and water at higher lake levels. Will GSL Minerals push the state to defend these structures? "Turning on" the West Desert pumps in order to defend evaporation ponds could have major effects on the natural lake level fluctuation (important to habitat vegetation cycles) as well as move vast amounts of salts and water out of the GSL system. What effect would this have?	144.34
2) Great Salt Lake is a dynamic system – how will changing water levels combined with the effects of drought and other planned diversions (Bear River) affect water	144.35

quality, quantity, salinity balance and wetland and open water habitat with these new facilities in place?	144.35

Salinity Balance/Water Circulation Patterns

1) An analysis of how the proposed development will affect natural lake currents and circulation needs to be undertaken, in Bear River Bay and other lake areas.	144.36
2) Study and impacts of how the proposed structures will further affect salinity balance in the Gunnison Bay and in the lake body itself, including maintenance work and flushing of new diked ponds need to be completed.	144.37

Other issues

1) The Corps should analyze the impact of the planned project on location, structure, and dynamics of aquatic communities, water level and temperature extremes, and salinity gradients.	144.38
2) In light of current projects in the San Francisco Bay whereby old evaporative ponds are being breached for wildlife and other public purposes at great expense, who should be held responsible for remediating and restoring the 80,000 acres should GSL Minerals go out of business or stop utilizing this large industrial complex? Should GSL Minerals put up a reclamation bond of sufficient size for reclamation, or should the public end up bearing the cost? Where would responsibility lie for returning the 80,000 acres to being a functional part of the Great Salt Lake?	144.39

Scale III: Cumulative Impacts

Of critical importance to making an informed decision concerning this proposal (and all development proposals concerning the Great Salt Lake ecosystem) is an understanding of the cumulative effect of this action when added to other lake-altering activities. This key piece of information has not been provided, but should be analyzed – otherwise the Corps cannot be sure that lake system functions/processes and other legal uses are sustainable. It is essential to proper protection and maintenance of the lake's aquatic ecosystem that some analysis and sustainable level be identified for all combined mineral extraction activities lakewide.	144.40

Because today's planning and analysis protocol considers current proposals as stand-alone, the citizens of Utah and the nation will only know when some cumulative threshold of sustainability will have been crossed when we witness the negative consequences on the ground and in the water. We recommend that you complete the following in your deliberations:

1) An analysis of how this proposal, when combined with current proposals in the same area (oil and gas leasing in the North Arm, proposed diversion of Bear river water, for instance) might cumulatively affect wetland and aquatic ecosystems. To our knowledge, there is no overall "water budget" for Great Salt Lake and no attempt to determine if the lake itself, its health and natural processes, and its beneficial uses should have a minimum lake level established for their public trust maintenance.	144.41

Should this be done before approving one of the largest proposals in history for water removal and sequestration?	144.41
2) An analysis of the permanent removal of shoreline and lake bed habitat and its cumulative impact when combined with the already-diked mineral removal or evaporation ponds elsewhere on the lake. If this application alone will give single-use control of a total of roughly 10% of the entire lake's area (diked areas) at most water stages, what do the other operations capture and what are the combined effects on wildlife, wetlands and the aquatic ecosystem? Does this proposal in essence give single-use control over not just the diked areas, but the entire Gunnison Bay (roughly 1/3 of the entire lake)?	144.42
3) An analysis of how much these two project areas have been altered already and how much they deviate or already have lost their wetland and aquatic ecosystem characteristics (from previous mineral diking, the construction of the Northern Causeway, and other wetland loss from development in the area), and how much further the proposal will take this huge area of the lake away from properly-functioning conditions.	144.43
4) An analysis of the impact of lake level lowering due to this proposal and the increased exposure of lake bottom and mudflats. A determination whether there are human and/or wildlife impacts from newly-airborne dusts and particulates from exposed areas.	144.44
5) An analysis of what the effect on lake level is produced by all currently-operating mineral extraction removal. How much effect on lake level has already occurred through Corps permits issued to other mineral extraction operations?	144.45

Two final points for consideration:

1) The disturbance of natural values under this proposal for development is immense. Should the project go forward, how could it be mitigated at this scale? What kind of mitigation for this permanent loss would be considered? Where could it take place at the scale required? If this proposal for diking and massive water removal will damage beneficial uses (brine shrimp production, recreation, habitat degradation along the eastern shore (potentially including our preserve), far away from the dirt-moving/water pumping site itself, how would that be mitigated or even justified under legal public trust responsibilities? To figure out the precedent-setting mitigation that a proposal of this scale might require is an issue that needs to be publicly discussed and debated prior to issuance of a permit.	144.46
2) The Information Packet distributed by your office discusses alternatives to the current proposal that have already been "dismissed" from consideration. The spectacular new size and potential impact of the latest proposal, in our opinion, requires a reasonable person/agency to revisit <u>all</u> potential alternatives again. Eight of the thirteen dismissed alternatives have an "economic" consideration listed as one of the reasons for dismissal. In order for the public to make an informed evaluation on these grounds, the proponent and the Corps should be transparent, and make accessible the economic details of why the less-damaging alternative does not meet the economic criteria.	144.47

3) Finally, at the largest Great Salt Lake scale, are the proposed actions/impacts sustainable over time and have they contributed to lake health or are they degrading the functionality and value of the lake system? We believe the responsibility of the Corps requires the permitting of only those uses/proposals that are sustainable over time and that do not damage either the health of this public asset or other legitimate beneficial uses already in place.	144.48

Again, The Nature Conservancy appreciates this opportunity to provide scoping input and we wish you the best in your future deliberations.

Sincerely,

Dave Livermore
Utah State Director
The Nature Conservancy
(Signature on original hard copy mailed 7/9/2009)

CC: Maunsel Pearce, Great Salt Lake Alliance
Bruce Waddell, The Nature Conservancy
Lynn de Freitas, FRIENDS of Great Salt Lake
Wayne Martinson, National Audubon Society
Joro Walker, Western Resource Advocates
Rob Dubuc, Western Resource Advocates
Ella Sorensen, National Audubon Society
Ann O'Connell, League of Women Voters
Jack Ray, Utah Waterfowl Association
Bob Adler, University of Utah Law School
Nathan Darnall, USFWS
Jeff Richards, Utah Waterfowl Association
Jefre H. Hicks, Utah Airboat Association
Bill Fenimore, Wild Bird Center
Tim Brown
Craig Garner, Ducks Unlimited
Ted Wilson, Utah Rivers Council
Don Paul
John Cavitt, Weber State University
Dave Naftz, USGS
Bonnie Baxter, Westminster College
Don Leonard, Utah Artemia Association
Neka Roundy, Kaysville City Mayor

RECEIVED
JUL 14 2009
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Ltr # 145

Salt Lake City
July 11,2009

Gipson, US. Corps of Army Engineers
533 W. 2600 S, Suite 150
Bountiful, Utah 84010

My first thought when I first read the July 10,2009 article in the Desert News that Great Salt Lake Minerals is at it again. Please consider more than the dollar value of the minerals and the local and state taxes paid by GSL Minerals. Too often County and State entities fail miserably to go beyond the greed of harvesting more taxes, just for the sake of taxes all alone. 145.1

Please let me give you a little background in the Division of Wildlife Resources' dealings with Great Salt Lake Minerals years ago. In doing so I in no way purport to represent the current Division of Wildlife Resources or the Department of Natural Resources. At that time I was Chief of Game Management in DWR. Our first contact was made by a Dutchman by the name of Peter Berhens, who at the time represented a new company called the Great Salt Lake Minerals. He wanted to dike off the northeast arm of the Great Salt Lake and make evaporation ponds to extract minerals.

We explained how important Bear river Bay was for waterfowl, even nationally. However we could not discourage Peter. He was the most "pushy person I have ever met. He pulled every political string he could. He had no calms camping on the governor's office door step and/or the legislature at any time.

Peter never let up refining "the carrot and stick" push. He played on how benevolent his company's operation would be in bringing in dollars for the county and the state, as well as the approach that we should start to harvest this vast unused mineral resource as though nothing else mattered. Peter never let up a lick.

At the time DWR had a little more clout, as our code had a legal base and description of most of the area on the east side of the lake for us to control these lands for the benefit of wildlife. I recall the Division's legal base for use of these lands started to erode when Representative Hull's, of Hooper, legislation eliminated DWR's use on some State lands. Since then I recall that DWR lost any say so as these former areas were eliminated partially or all from the DWR Code. I am not sure, but I believe it went to State Division of Lands or the School Trust Lands.

Now getting back to Salt Lake Minerals and Peter Berhens- We took a look at the original area Peter proposed to make evaporation ponds on. Eventually we conceded to a north boundary that we thought we could live with. Our concern then was that Peter would piece meal his request and come back at some future day and want more. So our final agreement with Peter and Salt Lake Minerals was we would not oppose Peter's proposal and agreed on a north line, if he or they **would not** come back and ask for more

expansion to the north at some future day. I do not remember whether or not we had a formal written agreement. I believe it was probably just a gentleman's agreement.

It is not logical or ethical to grant GSL Minerals an expansion of their solar ponds just because all of us in the original commitment are retired or dead, or no one in office now is aware of prior commitments, facts or history of the situation. Another feature is that the current proposed expansion does not alter the fact that, if granted, this productive Bear River Bay arm would be completely eliminated on some 90,000 acres of productive waterfowl and shore-bird marsh. This bay area has a substantial sub emergent vegetative and associated insect base and a periphery of high yielding emergent plants like the three stem bulrush which yields a considerable seed base for resident and migrating waterfowl. 145.2

Also, if this expansion is granted to GSL Minerals now, what will stop it 25 years or so from coming back again and asking for another expansion, when all of the principals of today are retired or dead and no one in principal state agencies has a historical perspective of the facts of the past. 145.3

The action I propose does not mean those of us who are against GSL Mineral's current expansion proposal for 90,000 acres more into Bear River Bay are against other expansion proposals and all the supposed "goodies" associated with it. But we believe with the vast size of the Great Salt Lake, surely there are other feasible alternative sites available for mineral extractions without capitalizing on Bear River Bay where destructive forces would adversely impact resident and continental waterfowl populations even more than the droughts of the mid 1930's. Surely society understands, if waterfowl are adversely impacted, Society is likewise grossly adversely impacted. 145.4

Bear River Bay area is a key area for both resident and millions of migrating waterfowl. It is of extreme importance to migrating waterfowl. It is a vital area for the whole Pacific Waterfowl Flyway. Its food base holds migrating waterfowl until the big freeze comes. Without the bay or any diminution of it, Utah waterfowl hunters will see an adverse effect on hunting throughout the state. No other group supports wildlife more than waterfowl hunters and no group of hunters expend more money than they do for their sport. They put their money where their mouth is. This group not only plows a great deal of money back into local and state economies, but also into waterfowl stamp moneys, Ducks Unlimited and the Delta Waterfowl Research Center. All of which enhances sustenance of continental waterfowl and shore bird populations. 145.5

Great Salt Lake Minerals may well have convinced current entities that this current expansion proposal is a benign one or it is somehow tied into the original proposal, **which it is not.** It doesn't help that the state has already issued them leases, which may make GSL Minerals feel they already have "another foot in the door." or believe former players are all gone and no one remembers and powers to be now will likely treat this as a new proposal, **which it is not.** We should still hold them to their word. 145.6

Sincerely,

Norman V. Hancock

Norman V. Hancock
1225 Kensington Ave., Salt Lake City, Utah 84105

Ltr # 146

Ocean Star International, Inc.

65 NORTH STONE ROAD
P.O. BOX 643
SNOWVILLE, UT 84336

TELEPHONE 435-872-8217
FAX 435-872-8272

7/8/09

RECEIVED
JUL 9 2009
JG

Mr. Jason Gipson, Project Manager
(Public Notice SPK-2007-00121)
U.S. Army Corps of Engineers, Sacramento District
533 West 2600 South, Suite 150
Bountiful, Utah 84010

Dear Mr. Gipson:

It was a pleasure to meet and talk with you at the public open house for the proposed Great Salt Lake Minerals Corporation Production Expansion on the Great Salt Lake on 6/24/09. We learned a great deal about this project from you and from the people at Bio-West, Inc.

During our conversation you asked me when we harvested in the two Arms of the Great Salt Lake. We harvested high quality cysts in the North Arm from 1983 when the company started till 1993. We continued to harvest in the North Arm after 1993, but the quality of the cysts decreased and we stopped harvesting completely in the North Arm in 1996. We started harvesting in the South Arm of the Great Salt Lake in 1993, but the quality of the cysts was not great. From 1996 till now we have been harvesting exclusively in the South Arm. You could check the salinities during those times in the two arms to get an idea of what salinities are good for producing high quality cysts and lower quality cysts. The Great Salt Lake is known world-wide to produce high quality brine shrimp cysts. We need the salinities in the South Arm to remain high in order for these cysts to be produced. 146.1

With the above in mind, our main concern is with the return of hypersaline salt water from the North Arm of the Great Salt Lake back to the South Arm. With the filling of the large ponds envisioned by the Great Salt Lake Minerals Expansion project , we worry that the loss of head pressure in the North Arm would reduce the return of salt water to the South Arm resulting in the South Arm becoming more fresh. This then would result in the production of lower quality brine shrimp cysts which would greatly impact our business.

Secondly we want to mention that when we harvested in the North Arm of the Great Salt Lake, the majority of our harvesting took place on the western shore along the Hogup Mountains down to the tip of Fingerpoint. Existing ponds have already covered some of the areas we used to harvest in. Now, with the expansion of the ponds far to the north of Dolphin Island this location for harvesting would be eliminated. It is important to note in this respect that when we harvested in this area during 1983-1993, 146.2

the area was heavily used by birds. The birds were there for one reason and that was to feed on the brine shrimp and brine shrimp cysts that were produced in abundance there. The waters were shallow and calm and the birds could easily feed. For the future, if the lake ever rises up again, this area would be lost to the birds. 146.3

Thirdly, we are concerned about the flushing of the new 8,000 acre Bear River Pond. This could give a bolus of nutrients to the Great Salt Lake that could disrupt the cycle of natural algae production and 146.4

O.S.I.

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grazing by brine shrimp and affect their generation cycling. This could be a major problem to provide cysts for migrating birds at the right time. 146.4

Finally, we also want to remind you that if the new proposed SOP processing plant is opened near the southern Magcorp Ponds, the road traffic could be greatly increased in that area. I believe this road is a Tooele County road. I don't know if they know about the damage that could be done to this road by the increased movement of heave trucks over this road. I don't know if they would be prepared to cover the cost of maintaining this public road. They should certainly be contacted. 146.5

Ecologically speaking there is no doubt that there has been huge damage to the Great Salt Lake over time. We hope that this expansion will not occur that could further risk the remaining population of brine shrimp and the high quality cysts that they produce. 146.6

Sincerely,

Mark S. Lamon, PhD

Mark S. Lamon, Ph.D.
Vice President.

O.S.I.

Robert W. Volker
2169 Roosevelt Ave.
Salt Lake City, Utah 84108

RECEIVED
JUL 8 2009

July 5, 2009

Jason Gipson
U.S. Army Corps of Engineers
Nevada-Utah Regulatory Branch
533 W. 2600 South,
Suite 150
Bountiful, UT 8410

Dear Jason Gipson

I urge extreme caution with altering the Great Salt Lake for expanded mineral extraction by Great Salt Lake Minerals. The proposed size and scope are unreasonable.

Our hubris and ignorance, in the past, has irreparably impacted the Great Salt Lake to the point where the ecosystem will not recover in our lifetime. It is not a Dead Sea, rather is a gigantic source of life for bird migration, but we treat the lake has a dead end dumping ground of which we can do what we please without consequence. Because of our terrible track record of mistreatment the lake, in many sections, is now cesspool of human neglect and disregard. The mineral extraction damage to southern shoreline and the Salt Flats are prominent illustrations of our inability to responsibly extract minerals from the Great Salt Lake. 147.1

Thank you for your thoughtful consideration of larger issues for consideration than simply mineral extraction for economic gain.

Sincerely,
Robert W. Volker

From: Monique MOSSER [mailto:mmosser@orange.fr]
Sent: Friday, July 10, 2009 3:01 AM
To: Gipson, Jason A SPK
Subject:

Jason Gipson
Nevada-Utah Regulatory Branch
533 W. 2600 South
Suite 150
Bountiful, UT 84010
RE: Public Notice SPK200700121 / Great Salt Lake Minerals Corp.

Dear Mr. Gipson,

I am writing to adamantly oppose Great Salt Lake Minerals' application to expand its evaporation ponds and increase its water right in the North Arm of Great Salt Lake in Utah.
This project, involving even more ponds, trenches, pumps, trucks, would be a major step forward in the industrialization of Great Salt Lake, and one that many of us fear would have a huge impact on changing the ecology of the lake as we know it. And in doing so would not only jeopardize the important habitat Great Salt Lake provides for resident and migratory birds and wildlife that use the system, but would impact other lake uses and the ability of users to enjoy the solace of open space that the lake provides for us all. 148.1

GSL Minerals has also applied for a water right of 350,000 acre feet of water from the lake in Gunnison Bay. When added to an already approved water right of 150,000 acre feet of inflows and open water in Bear River Bay. 500,000 acre feet of water have the potential to influence the average levels over the entire lake - particularly during low water years. According to a model from the Division of Water Resources, for every 100,000 acre feet of water that the lake does not receive, the level of the lake could drop about 8 to
12 inches. This translates into a significant impact on the overall ecology, and particularly the biota in Gunnison Bay that creates that wonderful magenta colored water. 148.2

If production increases, a significant amount of open water in Gunnison and Bear River Bays could also become permanently petrified by a huge complex of evaporation ponds and dikes. 148.3

This would also rob a major work of art from its serendipitous appearance and disappearance contingent upon lake levels. The North Arm is home to Robert Smithson's iconic Spiral Jetty (1970), one of the most widely recognized and cherished American sculptures of the late twentieth century and perhaps the most iconic example of Land Art in the world. Smithson's sculpture is made of basalt rocks and earth taken from the site and formed into a massive 1500-foot-long coil that spirals into the Great Salt Lake. The expansive natural setting and red brine are integral to the artwork, providing an essential frame for experiencing Smithson's project. The lake level, the fragile balance of earth, salt lake, and local flora and fauna, symbolized in the form and structure of the sculpture, must be maintained to preserve the experience of the Spiral Jetty in this unique landscape. 148.4

I strenuously object to the proposed expansion project which will disrupt the area's isolated character as well as degrade the natural environment of the lake. I urge the State to seriously consider the detrimental effects that this project will have on wildlife, other lake uses, Robert Smithson's internationally acclaimed artwork, and to deny this and any future filings in the North Arm of Great Salt Lake that similarly constitute a threat to the surrounding environment. Thank you for your attention to this important matter.

Sincerely,

Monique MOSSER.
Monique MOSSER, Chercheur au CNRS, enseignante à l'EnsaV, 282, rue saint-Jacques
75005 Paris, FRANCE.