UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 8, 2008

Mr. Steven Bjornstad
Geothermal Program Office (ESC-25)
Naval Air Weapons Station
429 East Bowen Road, Mail Stop 4011
China Lake, CA 93555-6108

Subject: Scoping comments for development of a Draft Programmatic Environmental Impact Statement (DPEIS) for a proposed Geothermal Development Program, Naval Air Facility El Centro, Imperial County, California

Dear Mr. Bjornstad:

The U.S. Environmental Protection Agency (EPA) has reviewed the May 5, 2008 Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement for the subject project. Our comments are pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The Navy proposes to initiate a geothermal development program to produce electricity from non-hydrocarbon based power generation on Navy lands. The study area includes approximately 3,110 acres of Navy lands and 2,830 acres of adjacent Bureau of Land Management (BLM) lands. BLM is a cooperating agency for the PDEIS.

EPA commends the Navy for preparing a programmatic-level analysis and for pursuing a renewable energy power source. Because geothermal agreements may be issued before the resource has been proven, it is important that a thorough environmental impact analysis be completed and protective stipulations developed prior to finalizing arrangements. To assist in the scoping process for the project, we have identified several issues for your attention in the preparation of the DPEIS. We are providing recommendations for the programmatic analysis, as well as recommendations for analysis at the project-level. We also believe that the DPEIS is the appropriate stage to identify landscape-level mitigation measures or approaches that are designed to minimize adverse impacts to sensitive resources in the surrounding landscape.

We appreciate the opportunity to provide comments on the preparation of the DPEIS and look forward to continued participation in this process as more information becomes available. When the DPEIS is released for public review, please send one hard copy and one CD to

the address above (mail code: CED-2). If you have any questions, please contact me at (415) 947-4178 or vitulano.karen@epa.gov.

Sincerely,

/s/

Karen Vitulano
Environmental Review Office

Enclosures: Detailed Comments

cc: Vickie Wood, Bureau of Land Management

US EPA DETAILED SCOPING COMMENTS ON THE DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (DPEIS) FOR A PROPOSED GEOTHERMAL DEVELOPMENT PROGRAM, NAVAL AIR FACILITY EL CENTRO, IMPERIAL COUNTY, CALIFORNIA, JULY 8, 2008

Scope of Analysis

Identify All Associated Infrastructure and Impacts

The Draft Programmatic Environmental Impact Statement (DPEIS) should address at a general, landscape level the potential impacts due to the associated infrastructure required for development and exploration. Activities that may cause direct and indirect impacts include at a minimum building access roads, installing transmission lines, and pumping or injecting groundwater. The indirect and cumulative effects of these infrastructure changes should be identified. The DPEIS is the appropriate stage to identify landscape-level mitigation measures to minimize adverse impacts to sensitive resources in the surrounding landscape. The DPEIS should also address how impacts will be assessed and mitigated at the project-level.

Identify Sensitive Resources at the Landscape Level

The DPEIS should describe and summarize the key studies and information used to identify the areas with potential for geothermal development. When identifying these areas, the DPEIS should also identify environmentally sensitive areas and areas with potential use conflict, including: 1) those areas that contain species that are threatened or endangered; 2) aquatic resources, including wetlands and other waters of the U.S.; 3) bodies of water listed on the CWA 303(d) list; 4) ambient air conditions and criteria pollutant nonattainment areas; 5) sole source aquifers; 6) areas that are affiliated with Native American tribes; 7) historic properties, Native American sacred sites or sensitive areas, and cultural resources; 8) paleontological resources; 9) large residential areas in close proximity; 10) environmental justice communities; and 11) recreational use areas. The Navy should develop an analysis approach that identifies low, medium, and high sensitivity areas for these resource areas and describe this process in detail in the DPEIS. The Navy should coordinate with local, state, and federal agencies to compile this information. Measures should then be taken to either exclude these areas from development or identify appropriate stipulations to protect the resources.

Identify Subsequent NEPA Analysis

The environmental review process should be explained in detail. The DPEIS should clearly describe each phase of geothermal resources development (GRD) including leasing, exploration, development, and utilization, and the different activities associated with each phase of GRD. The DPEIS should describe: 1) the type of environmental review required for each phase of GRD; 2) the scope of the environmental review associated with each phase of GRD; 3) how the DPEIS will serve as a "tiering" document for subsequent, site-specific NEPA documentation; 4) the factors used to determine when a subsequent EIS is required; and 5) the factors used to determine when an Environmental Assessment (EA) is required, and 6) categorical exclusions that pertain to GRD. This will ensure that the appropriate environmental review, permitting, or compliance measures will be identified, defined, and implemented during each phase of the project. It will also enable agencies to exclude issues not relevant to that particular phase of the project.

Identify Geothermal Legislation and Financial Arrangement
The DPEIS should summarize current and past legislation regarding the development of geothermal resources in the United States including the Geothermal Steam Act of 1970 and amendments in 1977, 1988, 1993; and the Energy Policy Act of 2005, including the John Rishel Geothermal Steam Act Amendments of 2005. The provisions in the Energy Policy Act of 2005 that are designed to help the geothermal industry address challenges associated with the development of geothermal resources should be summarized.

The NOI indicates that the development of geothermal resources will be accomplished by means of a public-private venture capital arrangement between the Navy and an energy developer. The PDEIS should explain this arrangement and any potential land leases, royalty distributions, and sales agreements that could potentially occur. It should indicate whether the Navy will be the sole user of power. If leases are involved, EPA recommends that lease stipulations be developed as mitigation measures for the protection of resources. Lease stipulations should retain flexibility in areas where little resource data currently exist so that should important resources be discovered, appropriate mitigation measures of lessees can be included to adequately protect resources. Lease stipulations should also acknowledge that any proposed activity is subject to NEPA.

Water Resources

Surface and Groundwater Supply
The DPEIS should generally describe the water supply need for GRD and how this may impact ground and surface waters, including the Salton Sea. The DPEIS should identify potentially affected groundwater basins and mitigation approaches to ensure that resources are not significantly impacted. Subsequent EISs/EAs should specifically estimate the quantity of water the geothermal project will require, describe the source of this water, and describe potential impacts on other water users, and on the natural resources in the project's area of influence. The document should clearly depict reasonably foreseeable direct, indirect and cumulative impacts to groundwater and surface water resources, including springs and biological related resources.

Discuss depletion of both groundwater and surface water resources from project operations and the availability of local water sources to supply the project. The depletion of groundwater supply has occurred for the Coso Geothermal Plant in Inyo County resulting in the need to import water for injection. The project should include design and operational features that would conserve geothermal fluids. If there is potential for the project to require imported water, sources should be identified and impacts evaluated from this water transfer. In addition, the discussion of the affected groundwater basin should include the potential for ground subsidence.

Groundwater Quality
Geothermal power plants can possibly cause groundwater contamination when drilling wells and extracting hot water or steam. However, this type of contamination can be prevented with proper management techniques. The operators of such projects are required to obtain an Underground Injection Control (UIC) permit under the authority of the Safe Drinking Water Act (SDWA). The DPEIS should include assurances that application for a UIC permit will occur under which

there will be no potential effects of project discharges, if any, on groundwater quality, etc. At the project-level, injectate fluids should be identified and characterized. Please contact David Albright, Manager of EPA Region 9 Ground Water Office at 415-972-3532 for more information.

Stormwater Management
The DPEIS should note that, under the federal Clean Water Act (CWA), any construction project disturbing a land area of one or more acres requires a construction storm water discharge permit. At the project-level, the EIS/EA should document the project's consistency with applicable storm water permitting requirements and should discuss specific mitigation measures that may be necessary or beneficial in reducing adverse impacts to water quality and aquatic resources. The Navy and the project applicant should coordinate with appropriate county and state agencies on all required permits.

Clean Water Act Section 404
The DPEIS should address the need for compliance with Section 404 of the CWA. CWA Section 404 regulates the discharge of dredged or fill material into waters of the U.S., including ephemeral drainages. The DPEIS is the appropriate place to discuss landscape-level approaches to avoid and minimize impacts to these drainages. The EIS/EA should describe all waters of the U.S. that could be affected by the project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include acreages and channel lengths, habitat types, values, and functions of these waters.

Air Quality

Air Emissions and Air Quality Impacts
The DPEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the project (including cumulative and indirect impacts) for each fully evaluated alternative.

Imperial County is designated as nonattainment for 8-hour ozone (moderate). The Imperial Valley planning area is listed as nonattainment (serious) for particulate matter greater than 10 microns (PM_{10}). The DPEIS should estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project. The project level EIS/EA should analyze the potential impacts to air quality (including cumulative and indirect impacts) from the proposed project(s), particularly during construction and installation of the wells. Emissions would be generated by the diesel engines powering the drilling rigs and air compressors/mud pumps. The EIS/EA should specify emission sources and quantify these emissions. Such an evaluation is necessary to assure compliance with State and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

Geothermal fluids contain dissolved gases, mainly carbon dioxide (CO_2) and hydrogen sulfide ($H2_S$), small amounts of ammonia, hydrogen, nitrogen, methane and radon, and minor quantities

of volatile species of boron, arsenic, and mercury. Impacts from these emissions should be discussed. Since CO2 is a greenhouse gas, a discussion of impacts relating to climate change should be included. The discussion of climate change should include impacts contributing to climate change as well as impacts from the effects of climate change, such as increasing drought, on the project and its operations and resulting impacts (for example, leading to the need to import water).

General Conformity
The DPEIS should address the applicability of CAA Section 176 and EPA's general conformity regulations at 40 CFR Parts 51 and 93. Federal agencies need to ensure that their actions, including construction emissions subject to state jurisdiction, conform to an approved implementation plan. Emissions authorized by a CAA permit issued by the State or the local air pollution control district would not be assessed under general conformity but through the permitting process.

New Source Review (NSR) Construction Permit Program
Hydrogen sulfide is a regulated pollutant under the New Source Review (NSR) program. New major stationary sources of air pollution and major modifications to sources are required by the Clean Air Act to obtain an air pollution permit before commencing construction. This process is called new source review (NSR) and is required whether the major source or modification is planned for an area where the NAAQS are exceeded (nonattainment areas) or an area where air quality is acceptable (attainment and unclassifiable areas). The DPEIS should discuss if NSR program permits will be required for the geothermal power plants that may be constructed. If so, the DPEIS should describe the permitting process and the information that must be addressed in the permits.

Construction-related Emissions
Construction related impacts should also be discussed. The DPEIS should identify the need for an Equipment Emissions Mitigation Plan at the project level. We recommend that the DPEIS include the general recommendations below and discuss how requirements for emissions controls will be incorporated into the project specifications. The following mitigation measures should be considered to reduce PM_{10}, ozone precursors and diesel exhaust. Diesel exhaust is classified by EPA as a "likely" human carcinogen at environmental exposure levels (Health Assessment Document for Diesel Engine Exhaust, EPA 2002). Exposure to diesel exhaust may contribute to respiratory irritation and lung damage. There is no threshold of diesel exposure under which there is no risk.

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.

- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Reduce use, trips, and unnecessary idling from heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at California Air Resources Board (CARB) and or EPA certification, where applicable, levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. CARB has a number of mobile source anti-idling requirements. See their website at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm.
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
- If practicable, lease new, clean equipment meeting the most stringent of applicable Federal or State Standards. In general, only Tier 2 or newer engines should be employed.
- Utilize EPA-registered particulate traps and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site.

Administrative controls:

- Identify all commitments to reduce construction emissions and update the air quality analysis to reflect additional air quality improvements that would result from adopting specific air quality measures.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.
- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. (Suitability of control devices is based on: whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public.) Utilize cleanest available fuel engines in construction equipment and identify opportunities for electrification. Meet CARB diesel fuel requirement for off-road and on-highway (i.e., 15 ppm), and where appropriate use alternative fuels such as natural gas and electric.

Cumulative and Indirect Impacts

Cumulative impacts analyses are of increasing importance to EPA as they describe the threat to resources as a whole. Understanding these cumulative impacts can help identify opportunities for minimizing threats.

The cumulative impacts analysis should identify how resources, ecosystems and human communities of concern have already been affected by past or present activities in the project areas. Characterize these resources in terms of their response to change and capacity to withstand stresses, and identify the additional stresses that will affect resources. Trends data

should be used to establish a baseline for the affected resources, to evaluate the significance of historical degradation, and to predict the environmental effects of the project components. Large-scale mitigation for cumulative impacts is appropriate because of the scale of the project and should be identified.

EPA assisted in the preparation of the following guidance documents for assessing cumulative impacts and growth-related indirect impacts:

- Cumulative Impact Guidance: http://www.dot.ca.gov/ser/cumulative_guidance/purpose.htm
- Growth-related Indirect Impact Guidance: http://www.dot.ca.gov/ser/Growth-related_IndirectImpactAnalysis/gri_guidance.htm

We recommend use of these resources in the preparation of the PDEIS. While this guidance was prepared for transportation projects in California, the principles and the 8-step process outlined therein can be applied to other types of projects. We recommend the principles and steps in this guidance as a systematic way to analyze cumulative and growth-related indirect impacts for the project.

Alternatives Analysis

All reasonable alternatives that fulfill the purpose of the project's purpose and need should be evaluated in detail. The DPEIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail. A robust range of alternatives will include options for avoiding significant environmental impacts. Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies. The NOI indicates that an alternative might be developed to avoid possible land use conflicts or to prevent ultimate development near areas of sensitive resources. EPA supports this approach and recommends inclusion of such an alternative once sensitive resources have been identified. The alternatives analysis should describe the approach used to identify environmentally sensitive areas and describe the process that was used to designate them in terms of sensitivity (low, medium, and high).

Alternative power transmission line routes, pipeline routes, and access roads should also be evaluated. Variations in geothermal technology should also be addressed and/or analyzed in the DPEIS (e.g., closed-loop versus open-loop geothermal systems, dry cooling versus wet cooling systems).

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority (including tribal populations) and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. The DPEIS should include an evaluation of environmental justice populations within the geographic scope of the project. If such populations exist, the subsequent EIS/EA should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches

used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.

Transboundary Impacts

The project site is located approximately 20 miles from the U.S. Mexico border. In the past, the Council on Environmental Quality (CEQ)[1] has advised that including an analysis of reasonable foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the U.S. is useful. Because of the proximity of the project to the US/Mexico Border, it is appropriate that a section of the DPEIS specifically address potential impacts to Mexico.

[1] CEQ Memorandum to Heads of Agencies on the Application of the National Environmental Policy Act to Proposed Federal Actions in the United States with Transboundary Effects, July 1, 1997