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Subject: NPS Concerns with Concentrating Solar
Power Projects on BLM Lands in Southern Nevada

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February 5, 2009
Memorandum

To: Amy Leuders, Acting State Director,
Nevada Bureau of Land Management

From: Jonathan B. Jarvis, Regional Director,
Pacific West Region, National Park Service

Subject: NPS Concerns with Concentrating Solar
Power Projects on BLM Lands in Southern Nevada

The National Park Service (NPS) supports the
efforts of the Nevada State Office of the Bureau of
Land Management (BLM) to promote renewable energy
development projects and, more specifically, to
permit solar energy development projects in
southern Nevada. Solar energy on federal land

presents an important dimension to meeting our nation's energy needs in an innovative and environmentally responsible manner.

As the BLM proceeds with its analysis and permitting of renewable energy projects, it is important to consider the potential impacts to units of the National Park System that are located in the immediate vicinity of the proposed developments. The park units that appear most threatened include Devils Hole, a detached unit of Death Valley National Park, Lake Mead National Recreation Area, and Mojave National Preserve, located immediately west of the Nevada-California state line. With this in mind, as previously noted in scoping comments that the NPS submitted in response to the Solar Energy Development Programmatic Environmental Impact Statement (PEIS), we urge the BLM to consider possible cross-boundary or even regional impacts associated with siting large-scale solar projects.

Impacts that should be evaluated include but are not limited to: water availability and water rights issues associated with solar concentrating units, degradation of the visual resource, night sky impacts (from operational or security lighting), air quality impacts from construction or service vehicle use, sound resource impacts if turbines or cooling towers are used, and destruction of wildlife habitat or interruption of wildlife corridors.

Of particular concern to the NPS at this time are applications and plans of development for numerous solar energy projects proposed within the boundary of the BLM's Southern Nevada District Office. As of October 2008, there were 63 proposed projects within this area. In cases where plans of development have been submitted, the vast majority

of these projects propose to use utility-scale, concentrating solar power technologies.

Concentrating solar energy systems employing water-cooled technology use conventional steam plants to generate electricity, and can be expected to consume larger amounts of water for generation and cooling than similar systems using air-cooled technology or photovoltaic solar energy systems.

Most of the areas in Nevada that have been identified on BLM maps as having the highest solar energy potential also tend to be areas of scarce water resources. In arid settings, the increased water demand from concentrating solar energy systems employing water-cooled technology could strain limited water resources already under development pressure from urbanization, irrigation expansion, commercial interests and mining. As a result, this strain may cause additional impacts to other sensitive, water-dependent natural resources associated with these park units.

Depending on the location of these projects, large-scale concentrating solar energy projects in southern Nevada that require large amounts of water potentially face several water rights-related obstacles in obtaining the necessary water for their projects. These obstacles are based around several rulings and orders that the Nevada State Engineer's (NSE) office has issued in recent years and include:

Denial of new water rights applications in some over-appropriated basins

. One area where this is already the reality is the Amargosa Valley, where Devils Hole is located. The NSE has ruled that the Amargosa Desert hydrographic basin is over-appropriated by 18,000 acre-feet per year (afy) and applications

for new water rights will be denied (see NSE Ruling 5750). As a result, the total annual water demand (50,000 afy) estimated for solar energy development projects in the Amargosa Valley cannot be fully sustained by the water that is theoretically available for purchase or lease in the basin (approximately 7,000 afy).

Ability to move the point of diversion of existing water rights in some basins. Additional restrictions have been placed on the Amargosa Valley as a result of the NSE's newly issued Order 1197 stating that "conditions warrant the curtailment of future appropriations of underground water and additional regulation of change applications within a portion of the Amargosa Desert Hydrographic Basin". Specifically, this Order states that with few exceptions, within 25 miles of Devils Hole, any application to change the point of diversion of an existing ground-water right to a point of diversion closer to Devils Hole will be denied.

Abeyance of new water right applications in several basins until further scientific studies are completed. In 2002, the NSE issued Order 1169 stating that "all applications pending and any new filings for the appropriation of water from the carbonate-rock aquifer system in Coyote Springs Valley (Basin 210), Black Mountains Area (Basin 215), Garnet Valley (Basin 216), Hidden Valley (Basin 217), Muddy River Springs aka Upper Moapa Valley (Basin 219), and Lower Moapa Valley (Basin 220) will be held in abeyance until further information is obtained by stressing the aquifer by those water right permits already issued to appropriate water from the carbonate-rock aquifer system." These basins are located immediately north of the Lake Mead National Recreation Area, and appear to have several proposed solar

energy development projects located within them. As a result, proposed solar energy projects with large water demands in these basins could encounter lengthy delays in obtaining the necessary water for their project, if they are seeking to appropriate new water rights for their project from the regional carbonate-rock aquifer system.

Potential reluctance by the NSE to grant new water rights for water-cooled power plants in southern Nevada. In 2001 and 2002, the NSE issued Rulings 5008 and 5115, respectively, pertaining to water rights applications within several hydrographic basins north of Lake Mead National Recreation Area. In each case, the new water being sought in these basins was to be used to support the development of utility-scale power plants in these basins. Ruling 5008 set the precedent that action on the applications in the affected valleys would allow the applicant to provide water resources for the construction of realistic power generation projects, which will use water efficient, air-cooled technology. In the case of Ruling 5115, the applications involved seeking water for a water-cooled power plant. Ruling 5115 set the precedent that "the State Engineer does not believe it is prudent to use substantial quantities of newly appropriated ground water for water-cooled power plants in one of the driest places in the nation, particularly with the uncertainty as to what quantity of water is available from the resource, if any."

At a December 1, 2008 meeting between federal land management agencies to discuss renewable energy in southern Nevada, the Deputy State Engineer for southern Nevada indicated to agency representatives that the NSE would likely continue to formulate their decisions on granting new water rights for solar energy power plants in southern Nevada around

the same precedents established under Rulings 5008 and 5115.

The NPS asserts that it is not in the public interest for BLM to approve plans of development for water-cooled solar energy projects in the arid basins of southern Nevada, some of which are already over-appropriated, where there may be no reasonable expectation of acquiring new water rights in some basins, and where transference of existing points of diversion may be heavily constrained for some basins. Due to the limited availability of water supplies in southern Nevada, management decisions on plans of development for solar energy should be based on the suitability of a particular technology for the area, and should encourage the more water efficient photo-voltaic and air-cooling technologies over water-cooling technology. Such a decision would align the BLM with precedents set by the Nevada State Engineer in granting water rights for past power plant projects in southern Nevada.

In conclusion, if utility-scale solar energy development is to be successful in southern Nevada, energy policy managers, energy developers, federal and state land management agencies, and local communities need to discuss and recognize the natural resource constraints that will determine the success or failure of solar energy development projects in southern Nevada and plan accordingly.

To help achieve this goal, the NPS strongly urges the Bureau of Land Management and the Department of Energy to prioritize finishing their PEIS to establish sound environmental policies, and siting and mitigation strategies for utility-scale solar energy development in the southwestern United States, before proceeding with permitting individual projects.

Successful planning and permitting should also include evaluating the regional cumulative effects of solar energy development on ground water resources and other natural and cultural resources in basins where solar energy development interest is significant.

/s/ Jonathan B. Jarvis (signed original on file)

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