



California Regional Water Quality Control Board

Lahontan Region



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Jerry Brown
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MEMORANDUM

DOCKET

10-SIT-OII-1

DATE JAN 03 2011

RECD. JAN 03 2011

TO: Mike Monasmi
California Energy Commission
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FROM: Richard W Booth and Jan Zimmerman
Lahontan Water Board

DATE: January 3, 2011

**SUBJECT: REQUEST FOR COMMENTS ON THE SITING COMMITTEE'S
INFORMATIONAL PROCEEDING ON ISSUES THAT ARE CRITICAL
TO THE LICENSING OF FUTURE POWER PLANTS**

Thermal power plants generally have large footprints that can cover hundreds to thousands of acres in size. Historically, these large thermal plants have been sited in remote areas of eastern California that are characterized by broad alluvial valleys that are traversed by a hierarchy surface water features associated with braided alluvial systems. Depending on the design and siting of thermal power plants, there are a number of potentially significant impacts to water quality that must be adequately addressed. Without adequate mitigation, project implementation could result in significant adverse impacts to water quality and may result in cumulative impacts that have the potential to permanently alter the hydrological and ecological function of the aquatic resources within the project area, thereby adversely affecting beneficial uses of waters of the State.

AUTHORITY

State law assigns responsibility for protection of water quality in the Lahontan region to the California Regional Water Quality Control Board, Lahontan Region (Water Board). The *Water Quality Control Plan for the Lahontan Region* (Basin Plan) contains policies that the Water Board uses with other laws and regulations to protect water quality within the region. All surface water and ground water resources are considered waters of the State. Surface waters include, but are not limited to, drainages, streams, washes, ponds, pools, or wetlands, and may be permanent or intermittent. All waters of the



State are protected under California law. Additional protection is provided for waters of the U.S, under the Federal Clean Water Act. Project components that involve alteration, dredging, filling, and/or excavating activities in waters of the State constitute a discharge of waste¹, as defined in California Water Code (CWC), section 13050, and could affect the quality of waters of the State.

The State Water Resources Control Board (State Water Board) and the Lahontan Water Board regulate discharges in order to protect the water quality and, ultimately, the beneficial uses of waters of the State. The Basin Plan provides guidance regarding water quality and how the Lahontan Water Board may regulate activities that have the potential to affect water quality within the region. The Basin Plan includes prohibitions, water quality standards, and policies for implementation of standards. The Basin Plan can be accessed via the Water Board's web site (http://www.waterboards.ca.gov/lahtontan/water_issues/programs/basin_plan/references.shtml).

POTENTIAL IMPACTS TO WATERS OF THE STATE

Watersheds are complex natural systems in which physical, chemical, and biological components interact to create the beneficial uses of water. Poorly planned development and redevelopment upsets these natural interactions and degrades water quality through a network of interrelated effects. The primary impacts of poorly planned development and redevelopment projects on water quality are:

- Direct, indirect, and cumulative impacts – plans must include a comprehensive analysis of the direct, indirect, and cumulative physical impacts of filling and excavation of wetlands, riparian areas, and other waters of the State, performed from the site to the watershed level;
- Pollutants – the generation of pollutants during and after construction;
- Hydrologic modification – the alteration of flow regimes and groundwater; and
- Watershed-level effects – the disruption of watershed-level aquatic function, including pollutant removal, floodwater retention, and habitat connectivity.

These impacts have the potential to degrade water quality and impair a number of beneficial uses by reducing the available riparian habitat and eliminating the natural buffer system to filter runoff and enhance water quality. These impacts typically result in hydrologic changes by decreasing water storage capacity and increasing water flow velocity, which in turn leads to increases in the severity of peak discharges. These hydrologic changes tend to exacerbate flooding, erosion, scouring, sedimentation and

¹ "Waste" is defined in the Basin Plan to include any waste or deleterious material including, but not limited to, waste earthen materials (such as soil, silt, sand, clay, rock, or other organic or mineral material) and any other waste as defined in the California Water Code, section 13050(d).



may ultimately lead to near-total loss of natural functions and values, resulting in the increased need for engineered solutions to re-establish the disrupted flow patterns. Many examples of such degradation exist in California and elsewhere. The Water Boards are mandated to prevent such degradation.

Avoidance and Minimization

There are many ways a proposed project can degrade water quality and avoiding or minimizing potential water quality degradation pathways will eliminate or reduce subsequent effects. Water Board staff strongly encourage avoidance as the primary strategy to address water quality concerns. The environmental review must evaluate alternatives to avoid or minimize potential impacts to water quality, and provide a discussion of why any remaining impacts cannot be avoided or further minimized. All unavoidable impacts to waters of the State must be mitigated to ensure that no net loss of function and value will occur as a result of project implementation.

Characterization of Impacts

As noted above, avoidance is the best strategy to managing potential water quality impacts. For all unavoidable impacts, the environmental document must describe the cause(s), nature, and magnitude of all proposed impacts, and identify whether those impacts are either permanent or temporary. For waterbodies expected to be directly affected, impacts must be quantified in acres (lakes, ponds, wetlands) and in linear feet (drainages and shoreline features), as well as the sum of the total affected acres and linear feet reported by waterbody type. This information should be tabulated and reported in the environmental document.

Hydrologic Analyses

A number of activities associated with the design and siting of a thermal power plant have the potential to hydrologically modify natural drainage systems. If impacts are unavoidable, Water Board staff request that the impacts be minimized to the extent practical and that the Project be designed such that it would maintain existing hydrologic features and patterns to the extent feasible. Be advised that projects must be designed such that post-construction hydrologic conditions match pre-construction conditions to avoid erosion due to constrictions restricting the passage of peak flows or the retention of flows that may adversely affect downstream reaches. To ensure that in-channel modifications are designed appropriately, we require that a professional engineer, registered in the State of California, perform analyses of different storm event flows up to the 100-year storm event and evaluate the project's potential impacts to the existing hydrologic systems. The results of these types of analyses must be considered in the design of a project to verify that the proposed in-channel modifications will not result in hydrologic changes that exacerbate flooding, erosion, scouring, sedimentation, and/or loss of either upstream or downstream flows.



STORMWATER MANAGEMENT

Water quality impacts that result from development are primarily from stormwater runoff from nonpoint sources. Potential stormwater pollutants associated with thermal power plants include petroleum hydrocarbons, volatile organic compounds, and metals. Our Basin Plan prohibits “the discharge, bypass, or diversion of ... sludge, grease, or oils to surface waters.” During the environmental review, the potential water quality impacts resulting from stormwater runoff must be evaluated, and specific stormwater mitigation controls that will be implemented to treat stormwater runoff and ensure that pollutants do not enter surface water areas must be identified.

Post-construction stormwater management must be considered a significant component in the environmental review process. Of particular concern is the collection of stormwater runoff into channels and the discharge of that stormwater to natural drainage systems. Without adequate design, the consequences of combining these flows will likely be aggradation and headcutting upstream of the confluence and channel incision, increased sediment transport, and eventual widening downstream of the confluence. All potential stormwater impacts, in particular potential post-construction hydrologic impacts, must be considered during the design and siting of thermal power plants. Specific best management practices must be identified that, when implemented, will reduce those potential impacts to a less than significant level. Where feasible, we request that design alternatives be considered that redirect these stormwater flows from surface waters to areas where they will dissipate by percolation into the landscape.

PERMITTING

A number of activities associated with the construction of a thermal power plant may require permits issued by either the State Water Board or Lahontan Water Board because they have the potential to impact waters of the State. The required permits may include:

- Land disturbance of 1 acre or more may require a CWA, section 402(p) stormwater permit, including a National Pollutant Discharge Elimination System (NPDES) General Construction Stormwater Permit obtained from the State Water Board, or an individual stormwater permit obtained from the Lahontan Water Board;
- Discharge of low threat wastes to a surface water, including diverted stream flows, construction and/or dredge spoils dewatering, and well construction and hydrostatic testing discharge, may require an NPDES permit for Limited Threat Discharges to Surface Waters issued by the Lahontan Water Board;
- Discharge of low threat wastes to land, including clear water discharges, small dewatering projects, and inert wastes, may require General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality issued by the Lahontan Water Board; and



- Streambed alteration and/or discharge of fill material to a surface water may require a CWA, section 401 water quality certification (WQC) for impacts to federal waters (waters of the U.S.), or dredge and fill WDRs for impacts to non-federal waters, both issued by the Lahontan Water Board.

Some waters of the State are “isolated” from waters of the U.S.; determinations of the jurisdictional extent of the waters of the U.S. are made by the United States Army Corps of Engineers. Projects that have the potential to impact surface waters will require the appropriate jurisdictional determinations. These determinations are necessary to discern if the proposed surface water impacts will be regulated under section 401 of the CWA or through dredge and fill WDRs issued by the Water Board.

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