

**WASHINGTON STATE
ENERGY FACILITY SITE EVALUATION COUNCIL (EFSEC)**

**RESOLUTION NO. 306
COLUMBIA GENERATING STATION
CONDENSER SCALE REMOVAL**

Nature of Action. This action approves this resolution for the purpose of managing wastewater produced from a one-time only condenser scale removal process at Energy Northwest's Columbia Generating Station (Columbia) in a manner that meets both Washington State water quality standards and National Pollutant Discharge Elimination System (NPDES Permit No. WA-002515-1) conditions, and sets additional monitoring and reporting requirements.

Background. The scope of the NPDES permit for the Columbia Generating Station is intended to cover discharges of pollutants (those not otherwise covered by EFSEC Resolution or other authority such as the Nuclear Regulatory Commission) in any wastewater discharges to waters of the state. There are three approved point-source discharges in the NPDES permit, one to surface water (Columbia River), two to land (potentially to ground water).

There are three separate internal waste streams which enter the discharge conveyance to surface water. The major one, in terms of volume, is the "blowdown" from the circulating cooling water system which cools the steam condenser and associated machinery. This water (circulated at approximately 600,000 gallons per minute) is cooled, in turn, mainly by the evaporative process in six mechanical draft cooling towers, and recycled.

The cooling tower evaporation and "drift" losses average 13,500 gallons per minute. Even with replenishment of these losses with new water, the evaporation concentrates the dissolved solids in the circulating water to the point that they would cause excessive deposition in the system, impeding efficiency. To limit the build-up of mineral salts to tolerable levels, a small portion (<0.5%) of the water is released to the river as "blowdown." Chemicals are added also to retard deposition of solids and to limit corrosion and biological growth in the system. The almost continuous blowdown discharge, which normally varies between 800 and 4000 gallons per minute, would be expected to contain heat, residuals from any treatment additives, constituents of the intake Columbia River water (concentrated by evaporation), and system corrosion products.

By letter dated September 23, 2002 (attached), Energy Northwest requested temporary relief from the conditions set in the NPDES permit to allow for the discharge of wastewater during the steam condenser cleaning process to be conducted in April of 2003. A new cleaning agent was proposed to be used by Energy Northwest to address calcium carbonate deposits that had formed on condenser tube walls due to ineffective cleaning and treatment processes currently approved under the NPDES permit. The

current cleaning process consists of mechanical removal of the calcium carbonate scale with metal “darts”.

The proposed cleaning process would consist of securing the blowdown prior to the addition of the cleaning agent, Ferroquest™. Sodium tolytriazole would then be added for cuprous metal protection and to promote precipitation of copper in cooling tower basins. After the treated water circulates a sufficient time to remove most of the calcium carbonate scale (approximately one to two hours), sodium hydroxide would then be added for pH adjustment. This treatment process will raise copper, pH, and, potentially, zinc concentrations in the wastewater that would result in NPDES permit limitations being exceeded.

Council staff and the Department of Ecology reviewed the request to waive the NPDES permit requirements for copper on a short-term, temporary basis and determined that a waiver could not be granted for this cleaning process. Energy Northwest re-evaluated the cleaning process and proposed a revised condenser scale removal procedure in a letter received by the Council on March 21, 2003 (attached).

Energy Northwest has proposed that the discharge from the cleaning of the steam condenser will be pumped from the Columbia circulating water basin to the approximately 13 million gallon service water pond located approximately 4,500 feet from the basin at WNP-4. As a contingency, additional piping will be laid to connect the WNP-4 service water pond with the same-sized WNP-1 service water pond (an additional 3,000 feet of piping). The circulating basin will continue to be flushed by the continuous addition of makeup water from the Columbia River and piped to the WNP-4 service water pond until the wastewater meets both Water Quality Standards and NPDES permit limitations. Discharge to the Columbia River from the circulating water system basin through Outfall 001 will recommence when the wastewater meets the existing permit limits.

After completion of the cleaning process, Energy Northwest will submit a proposal for disposing of the wastewater stored in WNP-4 and potentially in WNP-1 service water ponds. Ultimate management of the wastewater cannot be determined at this time, as the potential constituents of the wastewater can only be estimated. Although bench-scale testing and experience from other power plants cleaning processes indicates that copper concentrations will likely be in the range of 1 ppm to 20 ppm, final characterization of the wastewater will determine both environmental concerns and the final management option.

Conclusion: In conclusion, WAC 463-36-050 explains that the Council’s consideration of public health, safety, and welfare includes environmental concerns, as follows:

In reviewing whether a proposed amendment is consistent with the public health, safety, and welfare, the council shall consider the short-term and long-term environmental impacts of the proposal.

In addition, the Council considers the limitation set by NPDES Permit No. WA-002515 and Washington State Water Quality Standards.

The Department of Fish and Wildlife, the Department of Ecology, and Council staff have reviewed the Energy Northwest requests and supplemental information on the one-time cleaning process for removal of scale from the steam condenser and find that the proposed cleaning process meets State regulations, NPDES permit limitations, and provides sufficient initial protections for public health, safety, and welfare, and the environment. The following summarizes the additional monitoring and reporting requirements for the adoption of Resolution No. 306:

1. Energy Northwest will be allowed to treat condenser scale using FerroquestTM, sodium hydroxide, and sodium tolytriazole during the cleaning procedure scheduled for April through May 2003.
2. The cooling water blowdown valve will remain closed during the cleaning procedure. Prior to recommencing discharge of the circulating cooling water to Outfall 001, the water will be sampled and analyzed for pH, zinc, and copper to confirm that it meets the limitations set by NPDES Permit No. WA-002515-1. This will be accomplished by two grab samples collected at an interval of at least 15 minutes.
3. Cooling water not meeting NPDES permit limitations will be pumped to the service water pond at WNP-4. Overflow from the service water pond at WNP-4 will be directed to the service water pond at WNP-1.
4. Once discharge through Outfall 001 recommences, wastewater stored in the WNP-4 and WNP-1 service water ponds will be immediately sampled and analyzed for copper. The results of this analysis will be submitted to Washington Departments of Fish and Wildlife, Ecology, and the Council for review and approval of temporary storage conditions.
5. To minimize impacts to avian species, Energy Northwest shall install appropriate avian deterrent devices and monitor the two service water pond areas for avian mortality. If birds are showing any signs of sickness or mortality, Energy Northwest shall notify the Department of Fish and Wildlife immediately.
6. Prior to disposal of the wastewater stored in WNP-4 and WNP-1 service water ponds, Energy Northwest will submit a plan for management of the wastewater to the Council for review and approval of discharge.
7. Placement of the 4,500 feet of piping shall be done in a manner that avoids and minimizes impacts to shrub steppe habitat, including methods to avoid impacts to birds that may be nesting in shrub steppe habitat.

Resolution. The Council hereby authorizes the approval of Resolution No. 306, covering the steam condenser scale removal process for the Columbia Generating Station described in the attached letters, and the above conditions.

Dated and effective this 14th day of April, 2003.

Washington State Energy Facility Site Evaluation Council

By: _____
Jim Luce, EFSEC Chair

Attest: _____
Allen J. Fiksdal, EFSEC Manager

Attachment 1. Columbia Generating Station Plans for Condenser Scale Removal dated March 17, 2003

Attachment 2. Columbia Generating Station NPDES Permit Waiver Request for Condenser Scale Removal dated September 23, 2002