

July 27, 2001

Mike Mills, Compliance Manager  
Energy Facility Site Evaluation Council  
P.O. Box 43172  
Olympia WA 98504-3172

Dear Mr. Mills:

At our May 23, 2001 meeting at Energy Northwest, we discussed the status of Energy Northwest's proposal for amending EFSEC Resolution 278, for Onsite Disposal of Contaminated Cooling System Sediments. Previous to this meeting, my staff had reviewed the proposal, met with staff at Energy Northwest and resolved outstanding issues. The proposed resolution authorizes on-site disposal of sediments containing low, but measurable, levels of radionuclides which have been removed from cooling systems at Energy Northwest's Columbia Generating Station.

Attached is a copy of the proposed amended resolution. The primary change is that the proposed amendment now covers other slightly contaminated cooling system sediments that are similar to the Cooling Tower sediments that were the subject of the original resolution. The proposal allows for a single, monitored disposal location, outlines sediment concentration limits and sets the pre-disposal screening criteria. It also contains a contingency plan in case limits are exceeded and the requirement for confirmatory measurement.

The Department of Health supports this proposed amendment. It allows for safe disposal of slightly contaminated sediments and follows the State's regulations for alternate disposal of slightly radioactive waste.

To eliminate confusion, we recommend that resolution 278 be terminated and this proposed EFSEC resolution be given a new number to take its place.

If you have any questions, please call Lynn Albin at (360) 236-3252.

Sincerely,

Debra McBaugh, CHP, Head  
Environmental Radiation

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

**RESOLUTION NO. 299  
COLUMBIA GENERATING STATION  
COOLING SYSTEM SEDIMENT DISPOSAL**

**Nature of Action.** Resolution No. 278 permits the onsite disposal of slightly contaminated sediment cleaned from the Columbia Generating Station circulating cooling water system. This action closes Resolution No. 278 and approves this resolution for the purpose of expanding the scope of plant cooling water systems covered by the disposal authorization and amending some of the monitoring requirements.

**Background.** Operation of the open cooling water systems at Columbia Generating Station (CGS) causes radionuclides contained in the source water or entrained from plant emissions to become concentrated in the sediment that accumulates in features of the cooling systems (e.g., tower decks, tower basins, pump basins, spray ponds, piping and system components). The concentrations of radionuclides in the sediment often exceed the lower levels of detection for environmental measurements. This requires that the material be managed as low level radioactive waste when cooling system components are cleaned.

In March 1995, Energy Northwest (then the Washington Public Power Supply System) requested approval of its plan to dispose of contaminated cooling tower sediment onsite. This approval was sought under the existing regulatory framework (WAC 246-221-180) that provides for state review and approval of a site-specific disposal plan. After conferring with the Departments of Health and Ecology, the Council approved Resolution No. 278 on May 8, 1995.

In December 1995, Energy Northwest requested that the scope of the disposal authorization be expanded to include sediment removed from the service water spray ponds. In August 1996, the Council approved by motion the relocation of previously removed spray pond sediment to the designated onsite disposal area. In June 1999, Energy Northwest resubmitted a revised application for a long-term authorization to dispose of spray pond sediment onsite. In June 2000, Energy Northwest provided detailed responses to Department of Health questions concerning the revised application.

The Departments of Health and Ecology have reviewed the Energy Northwest application and supplemental information and found that the proposed disposal plan for service water cooling system sediments provides sufficient protections for public health and the environment. This judgement is also based on a review of the five years of experience with onsite disposal of circulating cooling water system sediments. Accordingly, Council staff has recommended that the requirements of Resolution No. 278 and its Attachment No. 1, be superseded by this resolution, No. 299, and Attachment 1. The following summarizes the changes resulting from Resolution No. 299:

1. Scope is amended to include the CGS service water system as a sediment source.
2. References to solid waste requirements are deleted as they are not applicable to clean soil and low-level radioactive waste. Also, the solid waste reporting expectations are deleted

- since they are duplicated by the radiological monitoring reporting requirements.
3. Pre-operational baseline monitoring requirements are deleted because they have been completed. Data were submitted to the Council June 1995.
  4. Once-per-year pressurized ion chamber measurements are deleted because the required the full-time monitoring of direct radiation by thermoluminescent dosimeter provides more useful and relevant information.

**Resolution.** The Council hereby closes Resolution No. 278 and authorizes the onsite disposal of cooling system sediments containing low levels of radionuclides at the Energy Northwest Columbia Generating Station subject to the conditions specified in Resolution No. 299, Attachment 1.

Dated and effective this 13th day of August, 2001.

Washington State Energy Facility Site Evaluation Council

By: \_\_\_\_\_  
Charles J. Carelli, Acting EFSEC Chair

Attest: \_\_\_\_\_  
Allen J. Fiksdal, EFSEC Manager

Attachment 1. Onsite Disposal of Contaminated Cooling System Sediments

**Resolution No. 299, Attachment 1**  
**Columbia Generating Station**  
**Onsite Disposal of Contaminated Cooling System Sediments**

Resolution No. 299 authorizes the on-site disposal of sediments removed from cooling systems containing low levels of radionuclides at Energy Northwest's Columbia Generating Station (CGS). This authorization is contingent upon compliance with the following conditions:

**1. Disposal Area:**

Sediment disposal is limited to disposal cells specifically constructed for this purpose. The cells are to be located in an inactive borrow pit located south of the CGS cooling towers. The corners of the disposal area shall be marked with posts and signs indicating the dedicated purpose of the area. Interim storage of sediment in containers is allowed.

**2. Disposal Area Dose Limit:**

The disposal limits in Section 3 have been established to limit the annual dose directly attributable to this disposal operation to 15 mrem/year. This is the maximum dose above background that an individual would receive spending 2000 hours at the disposal site. Actual doses are expected to be much lower and should be maintained as low as reasonably achievable.

**3. Disposal Concentration Limits:**

- a. The following individual isotopic limiting concentrations have been established as the maximum values allowed for disposal:

Co-60	5 pCi/g
Mn-54	30 pCi/g
Zn-65	50 pCi/g
Cs-134	10 pCi/g
Cs-137	20 pCi/g

- b. Since these radionuclides may not occur alone, the combined concentrations of the radionuclides will also be limited such that the sum of the fractions of maximum concentration for each nuclide does not exceed unity:

$$A+B+C+D+E \leq 1.0$$

A = actual concentration ÷ maximum concentration Co-60 (5 pCi/g)

B = actual concentration ÷ maximum concentration Mn-54 (30 pCi/g)

C = actual concentration ÷ maximum concentration Zn-65 (50 pCi/g)

D = actual concentration ÷ maximum concentration Cs-134 (10 pCi/g)

E = actual concentration ÷ maximum concentration Cs-137 (20 pCi/g)

- c. This will assure that the incremental dose will remain below 15 mrem/yr. If additional radionuclides are detected, individual limiting concentrations will need to be established with concurrence from the state Department of Health prior to disposal.

#### 4. **Sample Analysis and Environmental Monitoring:**

Monitoring of the sediment and the disposal site will be conducted per Energy Northwest's standard environmental monitoring procedures and practices.

##### a. **Pre-Disposal Screening Criteria and Sample Requirements:**

1. Areas to be cleaned shall be sampled for pre-disposal screening. Sampling shall be conducted in a manner that discriminates among the areas to be cleaned (e.g., cooling tower basin samples are composited separately from tower deck samples). Wet composite samples shall be taken in sufficient quantity to support additional dry analysis that may be required as described below.
2. If the analysis results of a wet composite sample are less than 20% of the disposal limits listed above and no other man-made radionuclides are found, the sediment from the respective area may be placed in the disposal cell without further pre-disposal analysis.
3. If the analysis results of a wet composite sample are equal to or greater than 20% of the disposal limits listed above, the same sample (or a split of the same sample) shall be dried and reanalyzed. If the dry results are less than the disposal limits and no other man-made radionuclides are found, the sediment from the respective area may be placed in the disposal cell.
4. If the analysis results of a dried composite sample exceed the disposal limits, the material shall be held for decay before it is disposed onsite or it shall be disposed by other means such as burial in a licensed low-level radioactive waste disposal facility.
5. If requested, Energy Northwest shall provide the state a split of any sample taken for analysis.

##### b. **Routine Disposal Cell Monitoring:**

1. **Direct Radiation Dose Rate** - A thermoluminescent dosimeter (TLD) station shall be established in close proximity to the disposal cells. TLDs from this station shall be read quarterly.
2. **Confirmatory Sampling** - A composite sediment sample shall be taken from the disposal cell within thirty (30) days following each cleaning episode and analyzed dry to confirm that the disposal criteria have not been exceeded.

**c. Chemical Sampling:**

Metals - Once every five (5) years, the accumulated sediment shall be sampled and analyzed for total copper, zinc, and nickel. Other constituents will be analyzed if requested by the state Department of Ecology.

**5. Disposal Site Closure**

Disposal operations are anticipated throughout the operating life of Columbia Generating Station. The disposal site shall be closed in accordance with regulations in effect at the time of closure.

**6. Notifications:**

Information regarding unusual circumstances or testing data that exceeds the specified limits will be reviewed within ten (10) working days with the state.

**7. Reporting:**

- a. Routine disposal cell monitoring (4.b above) shall be reported annually in the Radiological Environmental Monitoring Program (REMP) report. The report shall also contain the annual quantity or volume and estimated in-place density of sediment, plus the annual quantity of radionuclides placed in the disposal area.
- b. Chemical sampling plans and analytic results shall be provided to the Council after each sampling event.