

Washington Public Power Supply System

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Docket No. 50-460

January 25, 1983
G01-83-0032

Office of the Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

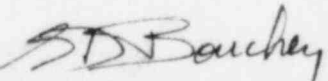
Subject: SUPPLY SYSTEM NUCLEAR PROJECT NO. 1
ENVIRONMENTAL REPORT - OPERATING LICENSE STAGE
RESPONSES TO NRC ACCEPTANCE REVIEW QUESTIONS

References: 1) Letter, D. G. Eisenhower (NRC), to R. L. Ferguson
(Supply System), dated July 16, 1982
2) Letter, D. G. Eisenhower (NRC) to Reactor Licensee,
Holders of Construction Permits and Applicants,
"Submittal of Documents to the Nuclear Regulatory
Commission", dated August 9, 1982

A request for additional information relative to the WNP-1 Environmental Report-Operating License Stage was transmitted as Enclosure 2 to Reference 1. In accordance with Reference 2, forty (40) copies of our responses are attached.

If you require additional information or clarification, please contact J. P. Chasse, (509/372-5569).

Very truly yours,



G. D. Bouchey, Manager
Nuclear Safety & Regulatory Programs

JPC/sm

Attachment: Question Responses

cc; MC Thadani - NRC
CR Bryant - BPA 399

COO1

ATTACHMENT

RESPONSES TO NRC OL ACCEPTANCE REVIEW
QUESTIONS OF JULY 16, 1982 (RE: WNP-1 ER-OL)

- 290.01 Q. Provide in Chapter 5 information on the amount of drift and the predicted direction and distance of the maximum amount of drift.
- A. Section 5.1 will be amended to include the requested information.
- 290.02 Q. ER page 6.1-18, first line. "Table 6.1-2" should be Table 6.1-1.
- A. The ER-OL will be amended to indicate the correct table.
- 290.03 Q. ER page 6.1-20, first paragraph. A map should be provided indicating where soil sample collection sites are located.
- A. Soil samples are collected at the four grassland and five shrub sites indicated on Figure 6.1-5.
- 290.04 Q. Chapter 6.2. Provide an Operational Monitoring Program for terrestrial ecology, i.e. effects of cooling tower drift or the basis for not needing one.
- A. Subsection 6.2.5 indicates the intent to continue terrestrial monitoring programs described in Subsection 6.1.4. The design of the operational program will be influenced by results of the WNP-1 preoperational program and the WNP-2 operational program.

- 291.01 Q Provide quantitative estimates of Corbicula sp. densities in the vicinity of the intake structure.
- A. Dives in the vicinity of the intake structures were performed in May and August 1981 and September 1982 and no Corbicula were found. SCUBA dives approximately five miles upstream of the intakes resulted in the collection of a few specimens. SCUBA inspections in the river at the intakes, in the WNP-1 and WNP-2 circulating water pumphouses, and in the WNP-2 cooling tower basins and emergency spray ponds did not produce any Corbicula. Yearly inspections will be performed per the Supply System's response to IE Bulletin 81-03 (Letter, D.W. Mazur, Supply System, to R.H. Engelken, NRC, dated July 7, 1981).
- 291.02 Q. The site drawing in Figure 3.1-2 is illegible; provide a new figure.
- A. The ER-OL will be amended with a new figure or a large format of the same figure.
- 291.03 Q. Compare the anticipated station water use provided during the CP review to the present values.
- A. Present estimates do not differ substantially from projections at the CP stage. The maximum withdrawal requirement is estimated to be 25,200 gpm which is about 500 gpm higher than estimated in the ER-CP. The maximum and average expected consumptive uses are essentially unchanged at 16,550 gpm and 11,650 gpm, respectively.
- 291.04 Q. Provide additional information on the presence of bass and sturgeon in the vicinity of the intake and discharge structures.
- A. Relatively few sturgeon and bass were collected by the Supply System's aquatic monitoring program in the site area between 1974 and 1980. During this time the following numbers of fish were collected: white sturgeon-60, smallmouth bass-57, and largemouth bass-15. These numbers represent 0.2, 0.2, and 0.1 percent of the total catch from 1974 through 1980. White sturgeon were collected with gill net, trammel net and electroshocking gear, whereas both species of bass were collected by these gear and by beach seines and hoop nets.

White sturgeon are recreationally important fish in the Columbia River between Priest Rapids and McNary Dams. Sturgeon are bottom dwellers, primarily scavengers, that feed on crustaceans and molluscs, most notably the crayfish and freshwater mussels present in the Hanford Reach. White sturgeon have been collected throughout the year near WNP-1.

Sturgeon activity seems to be influenced by temperature. As temperatures move above 55°F in June each year, long distance movements and localized shallow movements begin. Movements cease by late October as temperature fall below 55°F. Thermal tolerance data are generally lacking for this species.

Sturgeon usually spawn between May and July in swift currents over rocky or gravel substrates. Size characteristics of sturgeon taken in the Hanford Reach indicate the presence of a viable spawning population. Sturgeon eggs hatch in one to two weeks depending on the water temperature, however, no fry have been collected in the Hanford Reach.

Smallmouth bass (Micropterus dolomieu) are recreationally important fish throughout the Columbia and Snake River basins. Spawning in the Hanford Reach occurs in April through July and gravid females have been collected as late as August. Nests are built in shallow water over gravel and rock substrate and seldom are located near perceptible currents. Minimal river fluctuations during nesting and a 45-day post-nesting period is critical for the successful hatch and survival of bass fry. Fry disperse among nearshore aquatic plants shortly after they emerge. Adults typically return to the river in the late summer. Smallmouth bass produced in the Hanford Reach provide stocks throughout the river at least as far south as the confluence of the Snake River and perhaps to McNary Dam.

Smallmouth bass fry eat crustaceans such as copepods and cladocerans. As they grow, the diet changes to insects and small fishes. Adult bass have been reported to eat insects, crayfish and fishes. Adult smallmouth prefer water temperatures between 63 and 83°F. Spawning temperatures are typically between 55 and 68°F. The upper thermal tolerance limit for adults has been reported at 95°F.

291.05 Q. Make References 2.2-23 and 2.2-25 available for review during the site visit.

A. These references will be available.

291.06 Q. In addition to other requested information provide a summary and brief discussion in table form, by section, of differences between currently projected environmental effects (including those that would degrade, and those that would enhance environmental conditions) and the effects discussed in the environmental report submitted at the construction permit stage.

A. See Table Q291.06, attached.

291.07 Q. The NPDES discharge permit General Condition G1 prohibits the discharge of materials added for corrosion inhibition of re-circulating cooling water. Is the proposed use of sulfuric acid in the cooling system in compliance with the current NPDES Permit or will an amendment be required? Under what conditions could the cooling system be operated without acid addition?

A. Sulfuric acid addition for pH adjustment was addressed in the permit application and is allowed by the permit. Acid addition will be determined by parameters which cause the water to produce a scale (e.g., alkalinity, hardness, total dissolved solids, and pH). Acid will not be added if the water becomes corrosive.

TABLE Q291.06

SUMMARY OF PROJECTED ENVIRONMENTAL EFFECTS OF WNP-1 OPERATION (ER-CP vs. ER-OL)

	<u>ER-CP</u>	<u>ER-OL</u>
<u>Biological Effects of Heat Dissipation System</u>		
<u>Effects of Intake Structure</u>	Section 5.1.2 <ul style="list-style-type: none"> - Under "worse case" conditions 0.3% of river discharge withdrawn compared to 0.09% at annual average river flow. - All organisms that enter the intake will be lost. - Adults will be able to avoid 0.4 fps external screen velocity. - Fish eggs, larvae and fry may be entrained, however, these life stages are susceptible in the spring when river flows are high. 	Section 5.1.3.1 <p>No change, except a one year entrainment sampling program at WNP-2 (same intake structure design) revealed no fish eggs or larvae.</p>
<u>Effects of Thermal Effluents</u>	Section 5.1.4.3	Sections 5.1.3.2 - 5.1.3.6
Periphyton	Not addressed.	<ul style="list-style-type: none"> - At subclimax level of growth. - Diatoms dominate forms. - May enhance growth for short time in winter. - May decrease numbers near the discharge. - Overall no significant impact projected.
Benthos	Not addressed.	<ul style="list-style-type: none"> - Discharge temperature below the upper temperature limits for majority of organisms. - Negligible effect projected. - Sessile organisms within 15' of the discharge may be affected. Change would not affect population or fish resources.
Plankton	Not addressed.	<ul style="list-style-type: none"> - Entrainment time in thermal plume too brief to cause significant changes.
Fish	<ul style="list-style-type: none"> - Salmonid species most sensitive to thermal discharge. - Juvenile salmonids are present throughout the year but major out migration occurs in spring when river flows are high and thermal increments low. - Adults move along the shore, away from the influence of the center stream discharge. No migration blockage expected. - Cold shock not expected because of discharge location on a swiftly flowing portion of the Columbia River. 	<p>No change except thermal plume does not intercept any reported spawning areas.</p>

TABLE Q291.06 (contd.)

Effects of Liquid Chemical and Biocide Discharges

ER-CP

Section 5.4

- Cooling tower operates at 3-10 cycles of river concentrations.
- Effluent diluted rapidly, with mixing zones and dilution rates similar to thermal plume.
- After initial mixing chemical concentrations will be at levels at which no measurable change or detrimental effect have been reported.
- Intermittent total residual concentrations (TRC) at discharge = 0.1 ppm. May effect sessile benthic organisms 50' below discharge but losses are judged to be within natural population fluctuations. No adverse impact on fish movement or juvenile survival.

ER-OL

Section 5.3

No change, except additional discussion of copper, nickel, and sulfate discharges. The three parameters are predicted to have no major impact on biota near the site.

Atmospheric Effects

Section 5.1.4

Section 5.1.4

Plume and Fog Formation

- Elevated plumes at 2 km about 2090 hr/yr and 6 km about 450 hr/yr.
- Induced ground fog at 2 km about 690 hr/yr and 6 km about 180 hr/yr.
- Fog on Hwy. 240 5 hr/yr.

No change, except the circular tower configuration makes the estimates even more conservative.

Drift Deposition

Q 5.2

To be included by amendment

- Max deposition 400 lbs/acre/yr at about 0.25 miles to south.
- Less than 1 lb/ac/yr beyond 2 miles.

No change. Drift rate of 0.05 percent is conservative by an order of magnitude. Drift deposition also decreased significantly because only one plant will be operated.

Radiological Effect of Operation

Section 5.3

Section 5.2

Routine Operation

- Adult whole body dose = 0.14 mrem/yr/unit.
- Adult thyroid dose = 0.23 mrem/yr/unit.
- Population dose to whole body = 0.2 man-rem/yr/unit.

- Adult whole body dose = 0.19 mrem/yr.
- Adult thyroid dose = 0.24 mrem/yr.
- Population dose to whole body = 1.2 man-rem/yr.

Plant Accidents

Section 7.1

Section 7.1

- Max exposure at exclusion area boundary = 0.02 rem whole body and 0.66 rem thyroid for Classes 1-8.

- Max exposure at exclusion area boundary = 0.01 rem whole body and 0.17 rem thyroid for Classes 1-8.
- Class 9 (more severe than design basis) not evaluated at CP.