ENVIRONMENTAL STANDARD REVIEW PLAN

FOR ES SECTION 3.3.1 PLANT WATER USE: WATER CONSUMPTION

REVIEW INPUTS

Environmental Report Sections

3.3 Station Water Use

Environmental Reviews

3.4.1 Cooling System Description and Operational Modes

Standards and Guides

None

Other

Responses to requests for additional information

REVIEW OUTPUTS

Environmental Statement Sections

3.3.1 Plant Water Use: Water Consumption

Other Environmental Reviews

3.4.2 Cooling System Component Descriptions
3.5 Radioactive Waste Systems
3.6 Nonradioactive Waste Systems
5.2 Hydrological Alterations, Plant Water Supply and Water-Use Impacts (Operation)
5.3 Cooling System Impacts
9 Alternatives to the Project

I. PURPOSE AND SCOPE

The purpose of this environmental standard review plan (ESRP) is to direct the staff's description of plant water use, e.g., circulating water system, sanitary waste system, radwaste and chemical waste systems, and service water systems.

The scope of the review directed by this plan will include descriptions of the quantity of water required for plant operation, the amount of water consumed by the plant water systems, and the amount of water discharged to a water body. Variations in water requirements and consumption on a temporal basis and as a function of plant operating modes will be included. Where water use for station operation is greater than plant water use, these uses will also be included. The review will be in sufficient detail to provide basic data for other reviews dealing with the evaluation of plant operational impacts.

II. REQUIRED DATA AND INFORMATION

The kinds of data and information required will be affected by site- and station-specific factors, and the degree of detail will be modified according to the anticipated magnitude of the potential impacts. The data required will be in sufficient detail to trace the flow of water from the water supply sources to the points of discharge, indicating quantities consumed at each point of consumption as a function of plant operating conditions. The following data and information will usually be required:

A. A narrative description of the various plant water systems, their interconnections, and their operational interdependence and coordination (from the ER).

B. A water-use diagram for the plant showing flow rates to and from the various water systems (e.g., circulating water system, sanitary system, radwaste and chemical waste systems, service water systems), points of consumption, and source and discharge locations (from the ER).

C. For the water-use diagram required (above), the data and narrative description for maximum water consumption, water consumption during periods of minimum water availability, and average operation by month (from the ER).

D. A description of other station water uses (i.e., all facilities not associated with the proposed plant) showing flow rates to and from the facility, average water consumption, and maximum water consumption (from the ER).

II. ANALYSIS PROCEDURE

The reviewer's analysis will be closely linked with the reviews described by ESRPs 3.3.2, 3.4.1, 3.5, 3.6, 5.2, and 5.3 in order to establish the plant water-use characteristics of concern to those reviews.

The reviewer will analyze flow diagrams of plant water systems by performing simple mass balance computations to ascertain whether the reported flow rates (water source withdrawals, different plant water system needs, and discharge flows) are consistent for each plant operating mode. Those conditions considered should include periods of maximum water consumption, minimum water availability, and average operation by month. The reviewer will determine if there are other station facilities with water uses not associated with operation of the proposed plant and will include these uses in the analysis.

ES Section 3.3.1 is intended to give a brief description of the water use in plant systems and the principal subsystems. Details of the principal subsystems are described in ES Sections 3.4.2, Cooling System Component Descriptions; 3.5, Radioactive-Waste-Management-Systems; and 3.6, Nonradioactive Waste Systems. Therefore, the reviewer of ES Section 3.3.1 will concentrate on the description of principal flow paths from the sources of water through each subsystem to the receiving water bodies without detailed flow patterns within each subsystem.

IV. EVALUATION

The reviewer will ensure that the water-use information is adequate to describe plant water requirements and other station water requirements, to serve as a basis for assessing the sufficiency of water supply, and to assess the impacts of plant operation.

V. INPUT TO THE ENVIRONMENTAL STATEMENT

The following information will usually be included in ES Section 3.3.1:

A. Description of the flow path of water from the water sources through each major plant water system (e.g., heat dissipation system, sanitary system, radwaste and chemical waste systems, service water systems) to the points of discharge, including consumption for each such path (e.g., cooling tower evaporation).

B. A flow diagram to assist in tracing the flow path and the rates of flow for maximum water consumption, water consumption during periods of minimum water availability, and average operation by month. Details of seasonal and other operating variations may be provided in narrative and tabular forms.

C. As appropriate, descriptions of other station water requirements.

The reviewer will provide inputs or ensure that inputs will be made to the following ES Sections:

A. Section 3.3.2. The reviewer will provide data on plant or station water requirements to the reviewer of ES Section 3.3.2 in sufficient detail to support the analysis in ES Section 3.3.2.

B. Sections 3.4.2, 3.5, and 3.6. The reviewer will provide plant water-use data to the reviewers of ES Sections 3.4.2, 3.5, and 3.6.

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C. Sections 5.2 and 5.3. The reviewer will provide plant or station water-use data requirements to the reviewers of ES Sections 5.2 and 5.3 in sufficient detail to support the assessments given those sections.

D. Section 9. The reviewer will provide plant water consumption data to the reviewers of ES Section 9 as required for their analyses and evaluations of plant or component alternatives.

VI. REFERENCES

1. W. Stanier, ed., Plant Engineering Handbook, McGraw Hill, New York, NY, 1950.

2. J. F. Sebond, A Survey of Evaporative and Non-Evaporative Cooling Systems, GAI Report No. 19792, Gilbert Associates, Inc., Presented at the 74th National Meeting of AIChE, March 11-15, 1973.

3. Environmental Protection Agency, Reviewing Environmental Impact Statements--Power Plant Cooling Systems, Engineering Aspects, Report EPA-660/2-73-016, Pacific Northwest Environmental Research Laboratory, National Environmental Research Center, Corvallis, OR, October 1973.

4. G. R. Nelson, Technical and Economic Evaluations of Cooling Systems Blowdown Control Techniques, Report EPA-660/2-73-026, Pacific Northwest Environmental Research Laboratory, National Environmental Research Center, Corvallis, OR, November 1973.

5. USAEC, Nuclear Power Facility Performance Characteristics for Making Environmental Impact Assessments, WASH-1355, December 1974.