



DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION, CORPS OF ENGINEERS
210 CUSTOM HOUSE
PORTLAND, OREGON 97209

*Control Room
For Reservoir*

*Coffman
Winkler
file RB*

NPDEN-WC

1 November 1968

Mr. H. R. Richmond, Administrator
Bonneville Power Administration
P. O. Box 3621
Portland, Oregon 97208

Dear Mr. Richmond:

This letter will confirm a verbal understanding between Messrs. Carl Blake and Ken Earls of your office and Messrs. Dave Rockwood and C. E. Hildebrand of this office concerning the regulation of Pend Oreille Lake. The discussion which took place on 30 October 1968 was for the most part concerned with the November lowering of the lake. To assure our agencies have a mutual understanding of Albeni Falls reservoir regulation guidelines this letter will also review other seasonal regulation criteria.

It has been a long-standing criterion of this office to require the evacuation of the top 2.5 feet of storage space in the lake during the month of October. The purpose of this evacuation is to lower the lake for the prevention of bank erosion by wave action from fall and winter storms. This mandatory lowering to 2060 feet by 31 October must be made in a manner such that the lake is generally on or below the elevations indicated by a straight line connecting elevation 2062.5 feet on 30 September and 2060.0 feet on 31 October. In this way partial protection against bank erosion is available during the course of the month.

Another firm criterion is to have Pend Oreille Lake evacuated to at least elevation 2056 feet by 1 April of each year. The purpose of this evacuation is to provide sufficient storage space to permit regulation of the spring freshet at least equivalent of that provided by the natural lake storage prior to construction of the Albeni Falls project. However, any appreciable lowering of the lake subsequent to the kokanee spawning which takes place generally in late November and December, and prior to the kokanee fry leaving the gravel beds generally in late April, can destroy some of the eggs or fry. For this reason we desire to draft the lake to at least 2056 feet by the end of November of each year.

NPDEN-WC
Mr. H. R. Richmond

1 November 1968

We understand that lowering the lake to 2056 feet during November of each year will not adversely affect the firm load carrying capability of the federal power system. In consideration of this and because of the importance of the kokanee fishery, effective this date it will be a mandatory requirement that Pend Oreille Lake be lowered to elevation 2056 feet or below by 30 November. It is further required that during the month of December the reservoir shall be held constant at its 30 November elevation.

It is not necessary that the evacuation during November be accomplished in a straight line manner as was the case in October. It is desirable that the bulk of evacuation made in November be made prior to 20 November if possible and that the resulting discharge from the Albeni Falls project be as uniform as possible.

As a general rule no appreciable draft of the lake will be permitted between 30 November and 15 April. An exception to this general rule is when all other coordinated system reservoirs are drafted to their Energy Content Curves and further storage releases are required to meet system load demand. Drafts of one to two feet below the 30 November elevation may be made if required for special regulations such as Cusick Flats area drainage.

Following December, refill of the reservoir up to elevation 2060 feet will be permitted; however, the lake must be lowered to at least elevation 2056 feet by 31 March and may be lowered to its 30 November elevation anytime after filling to above this elevation.

Criteria for the maximum permissible lowering of the lake are as follows. No draft shall be made until after Labor Day and not more than 2.5 foot draft shall be made during September. Moreover, the September draft should be limited to the minimum possible consistent with systemwide power requirements. This limit is in the interest of recreational use of the lake. The lake should not be lowered below 2051 feet by 30 November except as necessary to serve firm power demand.

In summary the elevations of Pend Oreille Lake should be within the limits prescribed in the following tabulation:

| <u>Date</u> | <u>Maximum Permissible Elevation (feet)</u> | <u>Minimum Permissible Elevation (feet)</u> |
|--------------|---|---|
| July 31 | 2062.5 | 2062.1 |
| August 31 | 2062.5 | 2062.1 |
| September 30 | 2062.5 | 2060.0 |
| October 31 | 2060.0 | -- |
| November 30 | 2056.0 | 2051.0 |
| December 31 | 2056.0 | 2051.0 |
| January 31 | 2060.0 | 2051.0 |
| February 28 | 2060.0 | 2051.0 |
| March 31 | 2056.0 | 2049.7 |

NPDEN-WC
Mr. H. R. Richmond

1 November 1968

The seasonal regulation criterea given in this letter are limited to the drawdown season and concern only lake levels. They supersede any conflicting criterea in the Albeni Falls Reservoir Regulation Manual. Criterea for refill of the lake and other criterea such as minimum discharges and maximum rate-of-change in discharge are not included herein.

Sincerely yours,

C. A. CARROLL
Colonel, Corps of Engineers
Acting Division Engineer

Copy furnished:
NPS
Albeni Falls ←

Table 3

North Pacific Division, Corps of Engineers
Multiple-Purpose Projects with Power Facilities

PERMANENT OPERATING LIMITS
ALBENI FALLS AND JOHN DAY PROJECTS

| | <u>ALBENI FALLS</u> | <u>JOHN DAY</u> |
|---|---------------------|-----------------------------|
| <u>Reservoir Limits (Elev. in feet msl)</u> | | |
| Normal Full Pool | 2062.5 | 268.0 May-Oct |
| | -- | 265.0 Nov-Apr ^{6/} |
| Minimum Pool ^{1/} | 2049.7 Mar-Jun | 262.0 Jul-Mar |
| | 2051.0 Jul-Feb | 257.0 Apr-Jun |
| <u>Max. Rate of Change in Lake (feet)</u> — <i>WHEN DRAFTING — NO LIMIT ON FILLING.</i> | | |
| 24-Hour Limit (midnight to midnight) | 0.4' above E1.2058 | -- |
| | 0.5' below E1.2058 | -- |
| <u>Max. Rate of Change of Discharge (cfs)</u> | | |
| 60-Minute Limit | 3000 | -- ^{4/} |
| 24-Hour Limit Mean Daily Flow Limit (Midnight to midnight) | 10000 ^{2/} | -- |
| <u>Minimum Discharge (cfs)</u> | | |
| Instantaneous | 4000 ^{3/} | |
| 24-Hour Mean | 4000 ^{3/} | |
| <u>Max. Rate of Change in Tailwater (feet)</u> | | |
| 60-Minute Limit | -- ^{5/} | |
| <u>Generating Units (mw)</u> | | |
| Number of Units | 3 | 16 |
| Nameplate Rating | 3 @ 14.2 | 16 @ 135.0 |
| Continuous Overload | 3 @ 16.3 | 16 @ 155.3 |
| Short-time Overload | 3 @ 16.3 | 16 @ 155.3 |

^{1/} John Day pool may be lowered to 257.0 feet for flood control purposes only when McNary outflow exceeds 300 kcfs. Pool may be lowered below 262.0 to as low as 257.0 feet for power purposes only when required to produce firm load carrying capability of the system.

^{2/} When induced storage is necessary to fill Pend Oreille Lake in the spring, the maximum rate of reduction of discharge is 5000 cfs per 24 hours.

^{3/} This discharge is equivalent to tailwater elevation 2028.2 feet without backwater effect from Box Canyon Reservoir. The elevation is the controlling factor which must be maintained. The foregoing elevation applies only during non-work days and night-time. During normal work days the minimum tailwater elevation is 2029.3 feet which is equivalent to 7000 cfs with backwater.

^{4/} Controlled by rate of change of tailwater.

^{5/} Controlled by rate of change of outflow.

^{6/} Winter flood control storage.

Table 5

North Pacific Division, Corps of Engineers
Multiple-Purpose Projects with Power Facilities

UPPER AND LOWER RULE CURVES
ALBENI FALLS AND JOHN DAY PROJECTS

| | ALBENI FALLS | | JOHN DAY | |
|--------|---------------------|----------------------|---------------------|----------------------|
| | Upper Rule Curve | Lower Rule Curve* | Upper Rule Curve | Lower Rule Curve* |
| Jul 31 | 2062.5 | 2062.1 | 268.0 | 262.0 |
| Aug 31 | 2062.5 | 2062.1 | 268.0 | ↑ |
| Sep 30 | 2062.5 | 2060.0 | 268.0 | |
| Oct 31 | 2060.0 | 2051.0 | 268.0 | ↑ |
| Nov 30 | 2056.0 | ↑ | 265.0 | |
| Dec 31 | 2056.0 | ↓ | ↑ | ↓ |
| Jan 31 | 2060.0 | ↓ | ↑ | |
| Feb 28 | 2050.0 | 2051.0 | ↓ | ↓ |
| Mar 31 | 2056.0 | 2049.7 | ↓ | |
| Apr 30 | 2056.0 | 2049.7** | 265.0 | 262.0 |
| May 31 | -- | ↓ | 268.0 | 257.0 |
| Jun 30 | -- | 2049.7 | 268.0 | 257.0 |

* Lower rule curve is the lower limit of the Critical Rule Curve.

Note: The data given in this table are reservoir elevations in feet msl. They are the upper and lower permissible reservoir limits at various times of the year. More stringent limitations may be invoked by Critical Rule Curves and Energy Content Curves.

** Desirable minimum filling elevation by opening of trout season (4 May) is 2054.0 ft.