

BEFORE THE DIRECTOR
OF THE
DEPARTMENT OF WATER RESOURCES

IN THE MATTER OF EVALUATING)
WHETHER DEVELOPMENT OF NEW)
IRRIGATED ACREAGE WILL CAUSE)
A SIGNIFICANT REDUCTION IN)
TRUST WATER AVAILABLE FOR)
POWER PRODUCTION)

MEMORANDUM DECISION
AND ORDER

This matter having come before the Director of the Idaho Department of Water Resources (IDWR) as a result of the Swan Falls water right settlement, the Director finds, concludes and orders as follows:

FINDINGS OF FACT

1. "Trust water" is that portion of an unsubordinated water right used for hydropower generation purposes which is in excess of a minimum stream flow established by state action.

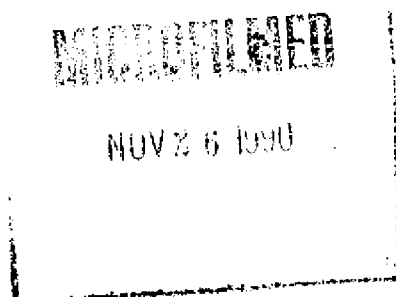
2. Section 42-203C(1), Idaho Code, provides as follows:

"If an applicant intends to appropriate water which is held in trust by the state of Idaho pursuant to subsection (5) of Section 42-203B, Idaho Code, the director shall consider, prior to approving the application, the criteria established in Section 42-203A, Idaho Code, and whether the proposed use, individually or cumulatively with other existing uses, or uses reasonably likely to exist within twelve (12) months of the proposed use, would significantly reduce the amount of trust water available to the holder of the water right used for power production that is defined by agreement pursuant to subsection (5) of Section 42-203B, Idaho Code, and, if so, whether the proposed reduction is in the public interest". (emphasis added).

3. The IDWR conducted a study to estimate the reduction in hydropower generation which would result from the development of the first 20,000 acres of newly irrigated land (new development) authorized under the Swan Falls settlement. The IDWR also conducted a study which involved 196,000 acres of new development.

The studies included several steps as follows:

a) Identify the location of the potential new development



and the related water sources;

- b) Estimate the net depletion resulting from new irrigation development of these lands;
- c) Route the reduced flows through the aquifer and surface flow systems to the affected power plants;
- d) Compute the loss in potential generation at each plant resulting from the reduced flows.

4. Step a) in Finding of Fact No. 3. was accomplished by plotting land location as shown by the water right applications and permits being considered.

5. Step b) in Finding of Fact No. 3. was accomplished using simulation models which have previously established the "base" flows conditions.

6. Step c) in Finding of Fact No. 3. involved a ground water component and a surface water component. Withdrawals from the Snake Plain aquifer and from the tributary valleys affect the water in storage in the aquifer. Storage changes alter the gradients which eventually reduce aquifer discharges. If a new withdrawal is continued long enough, the aquifer outflows will be reduced by an amount approaching the magnitude of the withdrawal and resulting depletion.

7. The IDWR digital model of the Snake Plain aquifer (ground water model) was used to simulate this process and predict the outflow reductions after 15, 30, 45 and 60 years of annual withdrawals by new irrigation development at the assumed locations. The results of the ground water model runs indicate that aquifer outflows for the first 20,000 acres would be reduced by 76 percent of the annual depletion after 60 years. The outflows for the 196,000 acres would be reduced by 87 percent of the average annual depletion after 60 years.

8. Significant reduction should be determined by evaluating the depletion when its effect on the river is fully felt. Incremental change in the percent of annual depletion is very small sixty (60) years after the first depletion. The percent of annual depletion in the 60th year adequately represents the long-term effect of aquifer depletions on Snake River flows.

9. The IDWR routed the reduced flows through the aquifer and river system using a digital model of the Snake River system (river model). This model and its computed base conditions are described in "Stream Flows in the Snake River Basin, 1985 Conditions of Use and Management" Open-File Report, September 1986. The ground water depletion was input to the river model

MICROFILMED

NOV 26 1990

assuming uniform depletions each month.

10. The river model computes flows at numerous points in the Snake Plain Basin including sites at, or near to, the power plants. These computed flows were used to compute power generation and were compared to similarly computed generation for base flow conditions.

11. The annual reduction in hydropower generation 60 years after the development of 20,000 new acres is estimated to be approximately 2.8 million KWH in power facilities upstream from the Murphy gage on the Snake River. Comparable reduction for 196,000 acres is approximately 21.9 million kwh.

12. In cooperation with staff of the Idaho Public Utilities Commission (IPUC), IDWR determined the rate impact of lost hydropower generation caused by the new development in the trust water area of the Snake River basin assuming that new thermal generation capacity is obtained to replace the lost hydropower generation.

13. The cost impact to the rate base of replacing the lost hydropower generation with thermal generation capacity must be considered in the evaluation of any significant reduction in hydropower generation, but the statutes and Water Appropriation rules do not require consideration of impacts to the rate base resulting from other aspects of the new development such as new pumping loads.

14. Step d) of Finding of Fact No. 3. was determined using an IPUC power supply model (power model) associated with the ratemaking process. Data from the 1966-1985 period was used to establish a base flow. The depletions were then input to the power model and the difference in ability to meet firm load requirements and to make economic spot market sales and purchases was determined. A comparison of the output of the power model run to base conditions produced increased total IPCO power supply costs due to Snake River depletions.

15. The power model shows that the impact of reduced hydropower generation at IPCO's facilities on the Snake River above the Hell's Canyon complex as a result of the development of 20,000 new acres (after 60 years) will result in an average increase in IPCO's power costs of \$159,553 per year which is approximately five one hundredths of one percent (0.05%). Comparable model results for 196,000 acres show an average power cost increase of \$837,654 per year, or approximately one quarter of one percent (0.25%).

16. During certain periods of each year there generally is unappropriated water in the Snake River. During these periods, a

MICROFILMED

NOV 26 1990

new appropriation of water has no effect upon IPCO's water rights or ability to generate hydropower.

CONCLUSIONS OF LAW

1. The development of 196,000 new acres of land will not cumulatively cause a significant reduction in IPCO's hydropower generation capability at hydropower generation facilities upstream from the Hells Canyon complex on the Snake River.

2. The hydropower generating facilities of IPCO which are affected by reductions in river flow represent approximately 25% of IPCO's hydropower generating capacity as compared to the Hells Canyon complex facilities which represent approximately 75% of IPCO's hydropower generating capacity. The Hell's Canyon facilities are subordinated to later in time consumptive uses and are not properly included as a part of the evaluation of significant reduction. (Water Appropriation Rule 5,3,1,4.).

3. The reduction in IPCO's hydropower generation capability caused by new development is such that the timing of the reduction, either on an annual basis or a long term basis, need not be considered by IDWR. The computer model studies show that for the first 20,000 acres, it would take approximately 15 years for aquifer outflow to the Snake River to be reduced 23% of net new withdrawal. By the 60th year outflow would be reduced by 76% of the new depletion. Development of 196,000 acres would reduce outflow by 87% of the new depletions in the 60th year. Other factors present in a dynamic system as large as the Snake Plain aquifer will have more effect on the discharge of the Snake River than decreases caused by this amount of new development.

4. Staff of the IPUC advises that the effect of reduced hydropower production on "unit cost" is not a proper factor to consider when analyzing the effect of reduced flows to hydropower generating facilities. IPUC generally considers hydropower facilities to have zero unit or production costs. Thermal facilities on the other hand do have associated unit costs such as the cost of fuel.

5. The IDWR is unaware of any contract or regulatory permits including FERC licenses which require IPCO to produce or to maintain capability to produce hydropower at specific levels.

6. Approval of applications for permit or permits which propose the development of 196,000 acres of newly irrigated land with water from the Snake Plain aquifer will not either individually or cumulatively cause a significant reduction in the water supply available to the holder of a water right used for power production purposes.

MICROFILMED

NOV 26 1980

7. The development proposed by Permit No. 36-7416B will not either individually or cumulatively cause a significant reduction in the water supply available to the holder of a water right used for power production purposes.

8. Permit No. 36-7416B should be continued without special conditions related to Section 42-203C(2), Idaho Code.

ORDER

It is therefore hereby ORDERED as follows:

Permit No. 36-7416B is hereby continued subject to the conditions shown on the continuation order.

Dated this 7TH day of NOVEMBER, 1990.


R. KEITH HIGGINSON
Director

MICROFILMED

NOV 26 1990