

COLUMBIA RIVER  
WATER MANAGEMENT REPORT  
Water Year 2002



Columbia River Water Management Group

October 2003

# **COLUMBIA RIVER WATER MANAGEMENT REPORT**

**WATER YEAR 2002**

**CHARTER**

**PREFACE**

**SUMMARY**

**TABLE OF CONTENTS**

**LIST OF TABLES**

**LIST OF FIGURES**

## **I. INTRODUCTION**

- A. PURPOSE
- B. BASIN DESCRIPTION
- C. WATER RESOURCES DEVELOPMENT
- D. TYPES OF RESERVOIR PROJECTS
- E. ANNUAL REGULATION CYCLE

## **II. HYDROMETEOROLOGY**

- A. OBSERVATIONS
  - 1. Weather
  - 2. Snowpack
  - 3. Surface Water Supply Index
  - 4. Streamflow
  - 5. Flood Events
    - a. Winter Floods
    - b. Spring Floods
- B. FORECASTS
  - 1. Runoff Volumes
  - 2. Long-Range Peaks
  - 3. Daily Streamflows

## **III. RESERVOIR REGULATION**

- A. SYSTEM OPERATION
- B. PROJECT OPERATION
  - 1. Mica Dam
  - 2. Revelstoke Project
  - 3. Keenleyside Project (Arrow Lakes)
  - 4. Libby Project
  - 5. Kootenai River at Bonners Ferry
  - 6. Duncan Project
  - 7. Kootenay Lake
  - 8. Columbia River at Birchbank
  - 9. Hungry Horse Project
  - 10. Flathead River at Columbia Falls
  - 11. Kerr Project
  - 12. Albeni Falls Project
  - 13. Grand Coulee Project
  - 14. Mid-Columbia PUD Projects
  - 15. Yakima Project
  - 16. Jackson-Palisades Project
- B. PROJECT OPERATION (continued)

17. Ririe Project
18. American Falls Project
19. Little Wood Project
20. Owyhee Project
21. Boise Project
22. Malheur Project
23. Payette Project
24. Snake River at Weiser
25. Powder Project
26. Brownlee Project
27. Dworshak Project
28. Clearwater River at Spalding
29. Lower Snake Project
30. Mill Creek Project
31. Willow Creek Project
32. John Day Project
33. Upper Deschutes River Projects
34. Chief Joseph, McNary, The Dalles, and Bonneville Projects
35. Columbia River at Vancouver
36. Willamette Basin Projects

#### **IV. FUNCTIONAL ACCOMPLISHMENTS**

- A. FLOOD DAMAGES
- B. ELECTRIC ENERGY
  1. Generation
  2. Marketing
  3. Intertie/Transmission
  4. Subscription/Power Rates
  5. BPA Financial Condition
- C. IRRIGATION
- D. NAVIGATION
- E. RECREATION
  1. Corps of Engineers
  2. Bureau of Reclamation
- F. WATER QUALITY
  1. Total Dissolved Gas Monitoring
  2. Water Temperature Monitoring
  3. Reports
- G. FISHERY OPERATIONS
  1. Actual Operation
  2. Spill and Flows for Fish
  3. Juvenile Fish Runs
  4. Adult Fish Runs

#### **V. COLUMBIA RIVER TREATY**

#### **APPENDICES**

- A. Glossary
- B. Abbreviations
- C. Charts

## **TABLES**

- 1 Monthly Precipitation Totals by Sub-basin
- 2 Accumulated Monthly Precipitation Totals by Sub-basin
- 3 Basin Average Monthly Temperatures
- 4 Oregon Surface Water Supply Index (SWSI)- see NRCS web site
- 5 Streamflow as Percent of Monthly Normal
- 6 Mean Discharges and Percentages of Normal
- 7 Modified Discharge and Runoff, Columbia River at Grand Coulee, WA
- 8 Modified Discharge and Runoff Snake near Anatone, WA
- 9 Modified Discharge and Runoff Columbia River at The Dalles, OR
- 10 Modified Discharge and Runoff Willamette River at Salem, OR
- 11 Winter Flood Peaks
- 12 Spring Flood Peaks
- 13 Forecast and Observed Runoff Volume
- 14 Unregulated Runoff Volume Forecasts
- 15 Monthly Forecasts vs. Actual Runoff, 1970-2002
- 16 Forecast and Observed Peak Flow and Stages
- 17 Summary of Flood Damage Observed and Prevented
- 18 Effect of Reservoir Regulation on Flood Peaks and Damages 1948-2002
- 19 Sources of BPA Energy
- 20 Historical Power Purchases
- 21 BPA Market Purchases and Sales
- 22 Actual Spill Operations for Juvenile Fish Passage
- 23 Summary of Fish Disposition at Collector Dams
- 24 Juvenile Fish Transport by Project, 1978-2002
- 25 Yearly Adult Fish Counts, 1999-2002

## **FIGURES**

- 1 Columbia River and Coastal Basins Map
- 2 Willamette River Basin Map
- 3 Western Washington Map
- 4 Southern Oregon Coastal Basins Map
- 5 Pacific Northwest Reservoir System Schematic
- 6 Seasonal Precipitation for Columbia River Basin, Water Year 2002
- 7 Columbia Basin Snowpack for Water Year 2002
- 8 Accumulated Precipitation for WY 2002 at Primary Columbia River Basins
- 9 Pacific Northwest Monthly Temperature Departures from Normal for Dec 2001