



Reservoir Operations

Joint Board Presentation
September 5, 2006

Today's Presenters

- Randy Lowe, Director of Power Management
- Gregg Carrington, Director, Hydro Services
- Tim Larson, Supervisor, Real Estate Services
- Kirby Reinhart, Rock Island Operations Manager

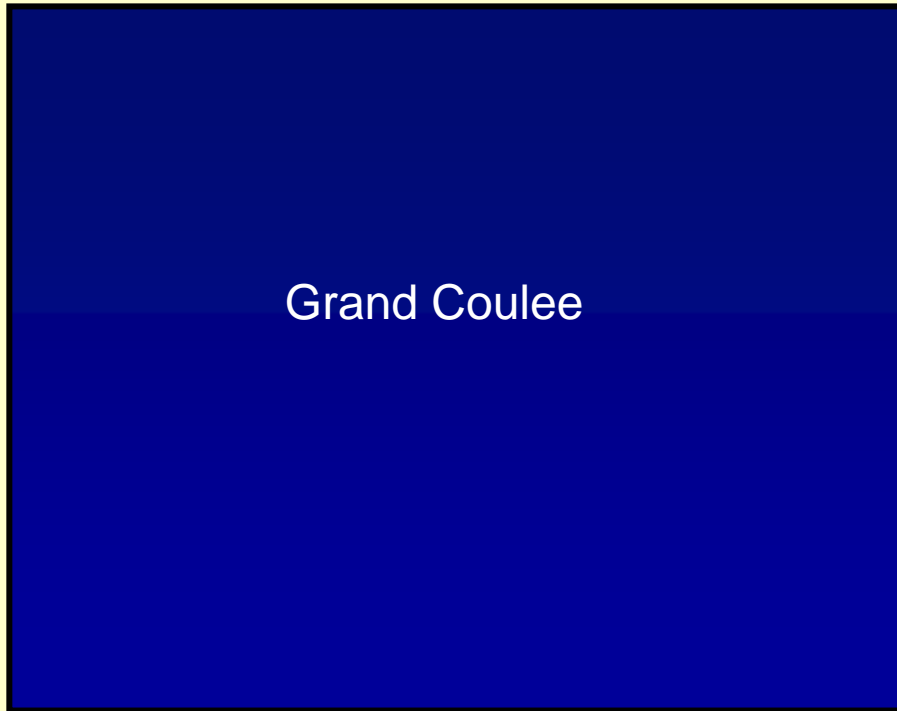
Agenda

- Introduction
- Reservoir Operations
- License Requirements
- Future Operating Considerations
- Land Rights
- Generation Issues
- Summary and Questions

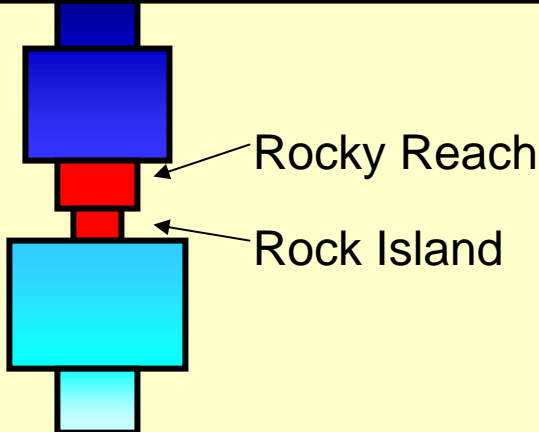
Mid Columbia Hourly Coordination

- Agreement signed 1972
- 20 participants
- Coordinates generation and reservoir levels at 7 projects
- Goal to maximize energy production
- Highly technical control logic

Columbia River Usable Storage



Grand Coulee	5,185,500	92.89%
Chief Joseph	46,400	0.83%
Wells	98,000	1.76%
Rocky Reach	36,400	0.65%
Rock Island	11,700	0.21%
Wanapum	160,000	2.87%
Priest Rapids	44,500	0.80%
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Total	5,582,500	100.00%



Reservoir Level

- Depends on many factors
 - Changes in flow, temperature
 - Spill
 - Actions by all participants
 - Vernita Bar Agreement
- Small ponds restrict flexibility
- Important that we preserve and defend existing pond size
- Backwater effects also important

License Requirements

Headwater Elevations

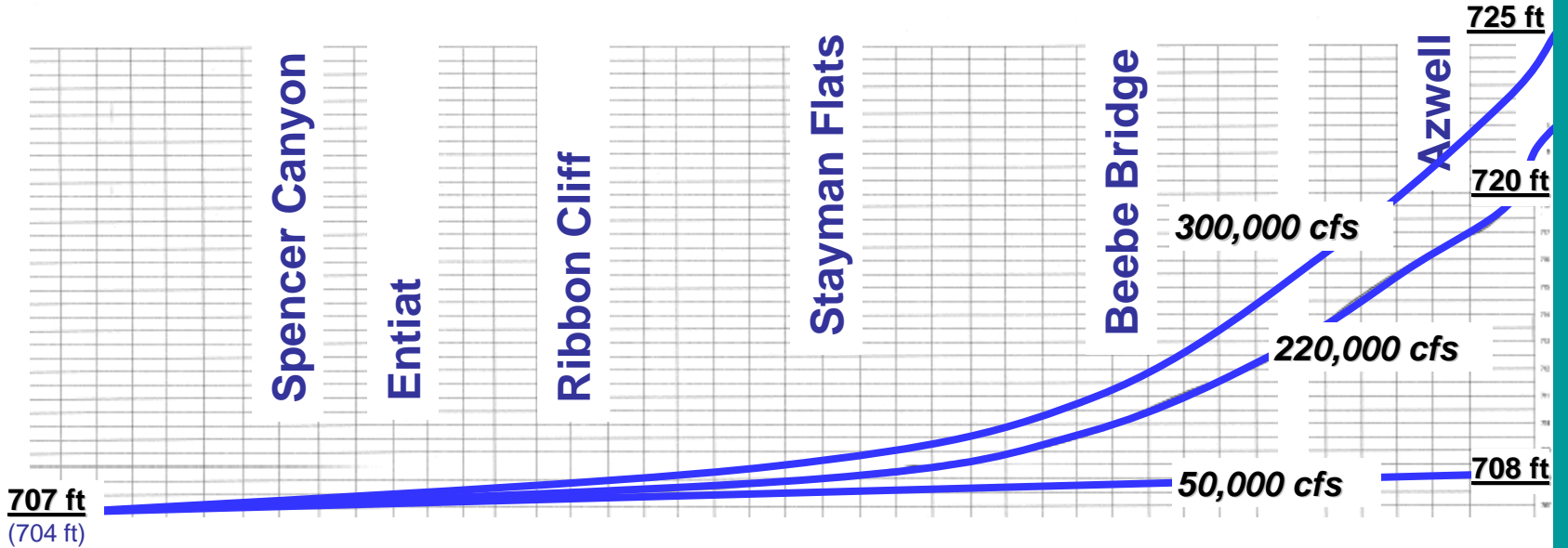
Rock Island

- FERC constraint regarding headwater elevation
 - Elevation limitations within 4 feet (609' min.; 613' max.)

Rocky Reach

- FERC constraint regarding headwater elevation
 - Elevation limitations within 4 feet (703' min.; 707' max.)
 - 710' for flood control if ordered by Army Corps of Engineers

Rocky Reach Dam



Columbia River Water Surface Profile
Rocky Reach to Wells Dam

Wells Dam

Future Operating Considerations

- Protection of habitat for juvenile lamprey and bull trout
- Steelhead and Chinook spawning at confluence of Chelan and Columbia rivers

Flowage Easements

- Chelan
- Rock Island
- Rocky Reach



Active Management

We perform Pool Patrols

- Frequency: Twice per month
- Look for elevation change, contour (excavation/fill), removal of riparian area
- Receive information of possible encroachments by word-of-mouth
- Information is shared with County Planning Enforcement Agents

Active Management

- Requests for Agency Comments
 - New construction
 - Homes
 - Docks/Slips
 - Ramps
 - Land Development
 - Erosion Control
 - Septic Systems
- Participate with Douglas County Regional Shoreline Master Program



Encroachment Issues







Power Operations and Production (POPs)

- Started in 1999 to increase focus on production and operations
- Meet every Thursday morning to share information
 - Hydro Operations
 - Outage scheduling
 - System Operations
 - Power Management

Power Operations and Production (POPs) Meetings

- What is the regional power demand and supply?
- What are the predicted flows?
- Outages
 - Length of outage
 - Impacts
 - Plant
 - System Operations
 - Marketing
 - Labor costs vs. outage costs
 - Special projects
- Spill concerns



Questions?