

# Libby Dam Information Brief

## Columbia Basin Regional Advisory Committee and CRT Local Governments' Committee Kootenay System Workshop

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US Army Corps of Engineers  
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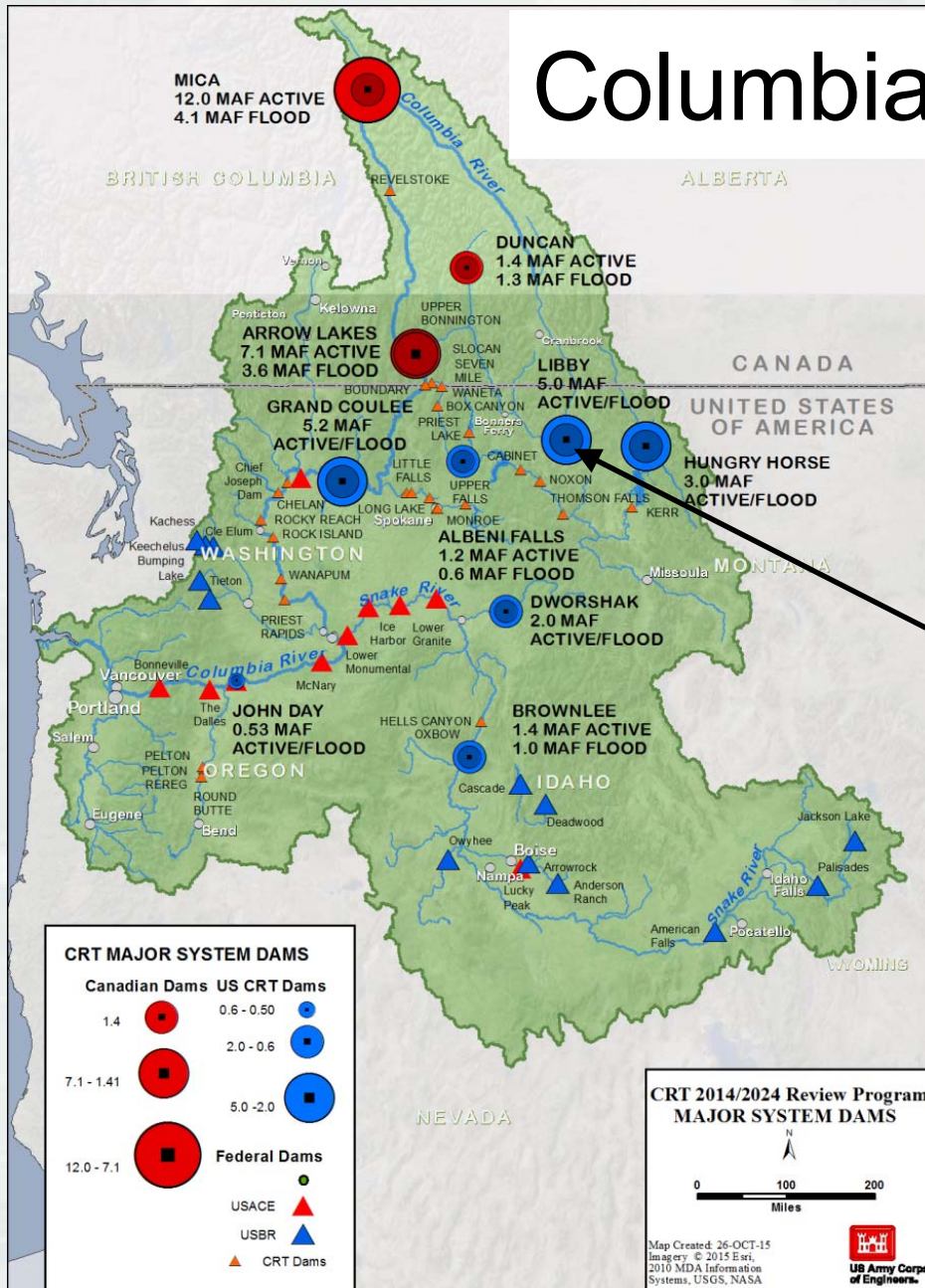
# Executive Summary

- **Purpose:** Inform the Kootenay Basin stakeholders about multi-purpose Libby Dam operations in the context of an interstate & international watershed
- **BLUF:** Libby Dam & Koocanusa Reservoir fulfill 5-purposes (hydro, flood risk, fish/wildlife, recreation, navigation) purposes while meeting environmental requirements in the international Kootenai River watershed of the upper Columbia Basin
- **Key points:**
  1. Complex – only Corps dam w/upstream & downstream international impacts
  2. CRT & IJC framework drive international interaction
  3. Significant Endangered Species Act considerations (NOAA BiOp = salmon & steelhead; USFWS BiOp = sturgeon & bull trout)





# Columbia Basin Map



Libby Dam

# International Interests & Concerns

## Upstream/Lake Koocanusa

### ■ US

#### ▶ Lake Recreation

- Access for boats – Lake is too low
- Marina Beaches inundated if reservoir is too high (2459 ft)

#### ▶ Air Quality – Dust if lake is low

### ■ Canada

#### ▶ Lake Recreation

- Max elevation of Libby Dam is 2459 ft per Columbia River Treaty
- Access for boats – Lake is too low
  - ▷ Lake does not reach Canada until elevation 2420 ft
- Beaches inundates if reservoir is at 2459 ft

#### ▶ Air Quality – Dust if lake is low

## Downstream/Border & Kootenay Lake

### ■ US

#### ▶ Flood Control (Bonners Ferry, ID)

#### ▶ Fishery – ESA listed species

#### ▶ Levee sloughing and saturation

#### ▶ Seepage of farmlands in Kootenai Flats (Northern Idaho)

### ■ Canada

#### ▶ Kootenay Lake

- Elevation (1755 ft) – Flood Control
- Power generation – Flows in winter

#### ▶ Levee slough and saturation

#### ▶ Farmland Seepage



# Libby Dam Regulation - General

## **Governing Statutes, Treaties, Executive Orders, guidance:**

- Libby Dam's Enabling Legislation
- Columbia River Treaty
  - ▶ Libby Coordination Agreement
    - Libby Operating Plan
- Endangered Species Act (ESA)
  - ▶ 2006 USFWS BiOp, as clarified
  - ▶ 2008/2010 NOAA FCRPS BiOp
- The Northwest Power Act
- The Clean Water Act
- International Joint Commission (IJC) 1938 Order on Kootenay Lake

Bonnars Ferry Idaho-1948



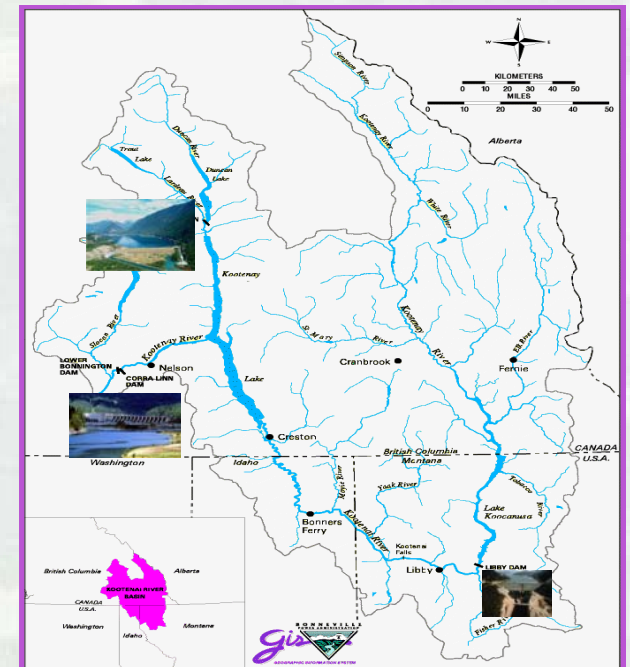
# Libby Dam Water Management in Kootenai Watershed

## Basin Characteristic – Variability

- Large: 9K mi<sup>2</sup> above & 10K mi<sup>2</sup> below dam
- Elevation from 2,500 to 12,000 ft
- Large monsoonal events in June/July
- Kootenay Lake creates a backwater into Northern Idaho

## Libby provides local & system control

- Max flood control draft = 4.98 MAF (EI 2287 ft)
- Koocanusa full pool is EI 2459 ft
- Local Flood Control Point is Bonners Ferry, ID
- System Flood Control for Portland & Lower Columbia developed areas

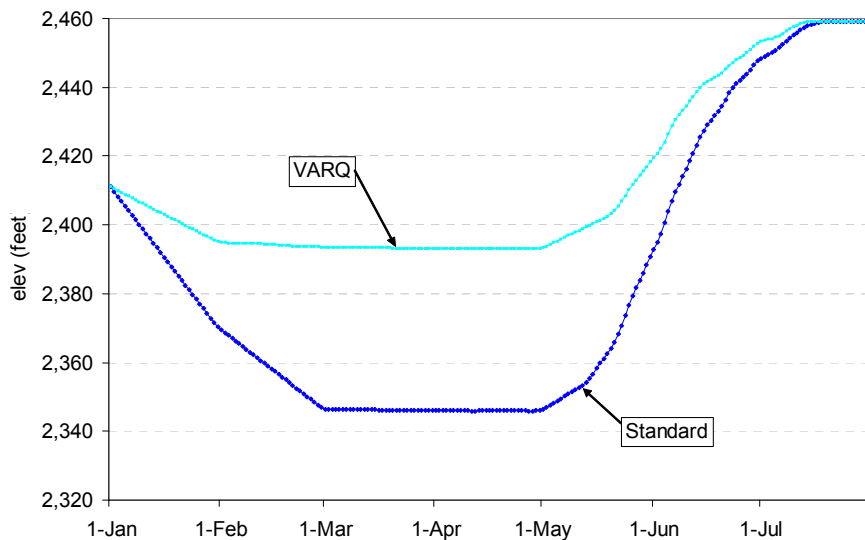




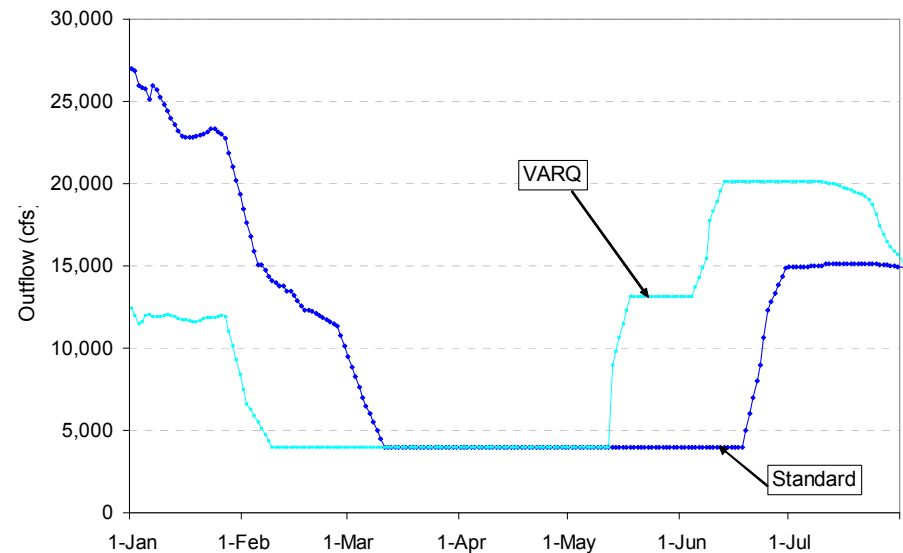
# Libby Flood Control Operations

- VARQ FC (Variable Flow Flood Control) is the preferred flood control procedure, operated to the “Standard” FC pre-2003
  - ▶ Improves the chances of refill
  - ▶ Provides more normative flow
- Draws the reservoir down less in the winter and requires more water out in the springtime
- Adopted as the permanent flood control procedure - June 2008

Lake Koocanusa Elev - comparison of VARQ and Standard

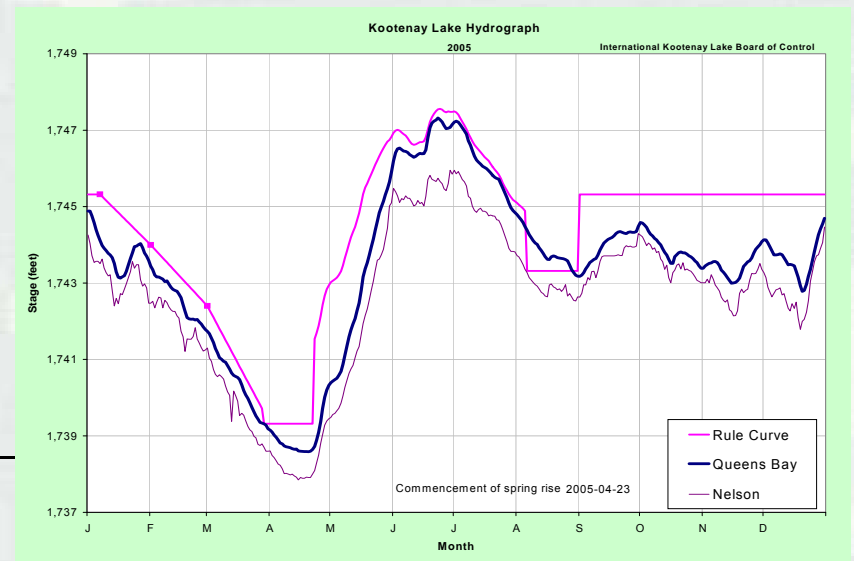


Libby Dam Outflows - comparison of VARQ and Standard



# Kootenay Lake and International Joint Commission (IJC)

- Kootenay Lake Order relates to Corra Linn Dam, owned by FortisBC
- Board of Control provides oversight of Corra Linn Dam
  - ▶ Board Members from both the US and Canada
- Compensates Idaho farmers for effects of higher groundwater
- The Order allows FortisBC to store water in the lake, but specifies a “lowering” formula for the freshet.
- Libby Dam reduced releases in both 2011 and 2012 to help with Queens Bay stage on Kootenay Lake








# Libby Dam Regulation – BiOp

## Biological Opinions

- 2006 USFWS BiOp, as clarified
- 2008/2010 NOAA FCRPS BiOp

## Operational Requirements

- Bull trout minimum flows 
  - ▶ Provides higher required minimum flows from May 15<sup>th</sup> - Sept 30<sup>th</sup>
- Sturgeon operations 
  - ▶ Dedicated release to provide a pulse in the later spring - early summer
- Salmon target 
  - ▶ 10 – 20 ft from full by 30 September
  - ▶ Required target to help with fish passage on the mainstem of the Columbia River

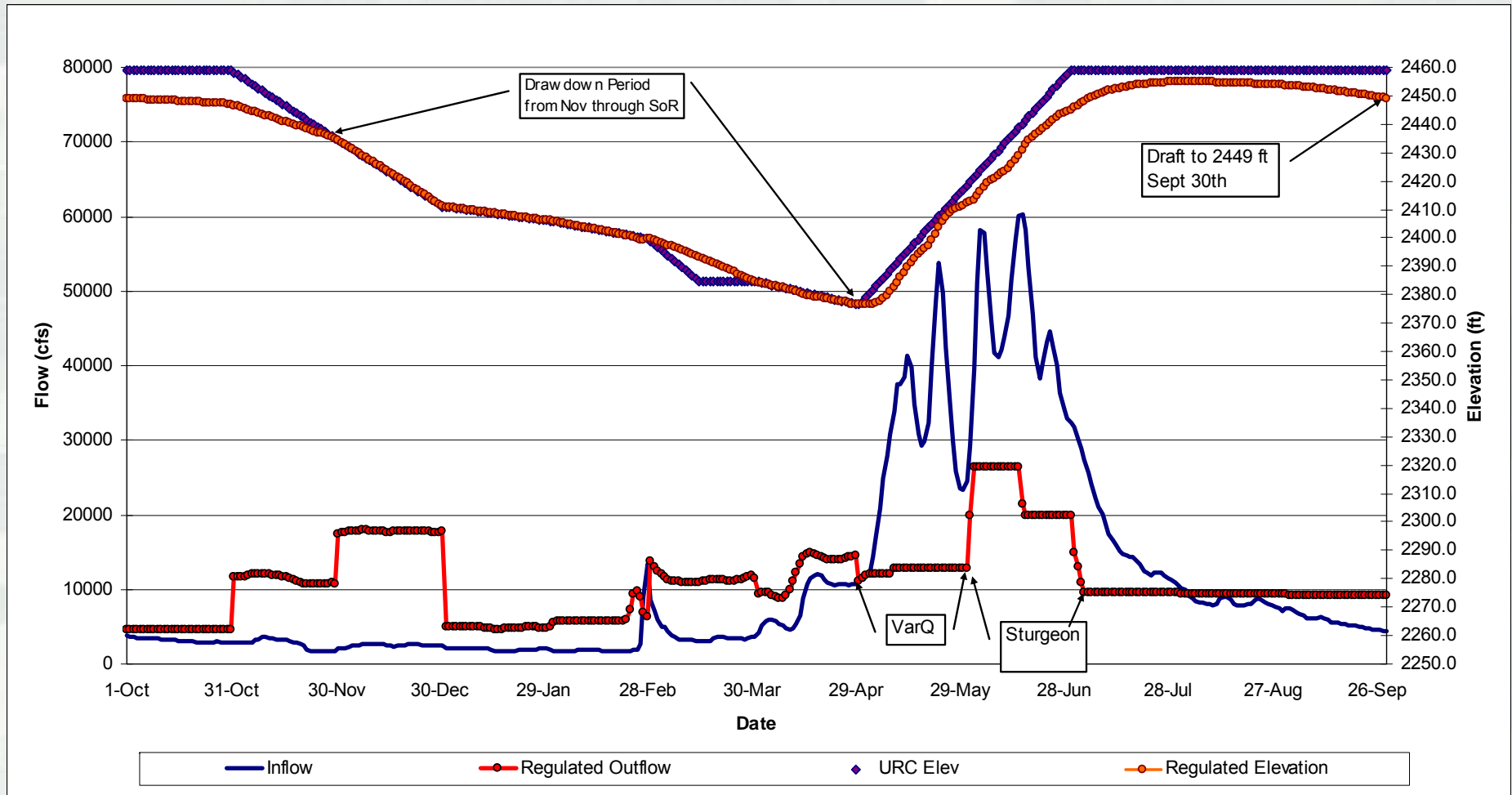
FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION  
regarding  
THE EFFECTS OF LIBBY DAM OPERATIONS  
on the  
KOOTENAI RIVER WHITE STURGEON  
BULL TROUT  
and  
KOOTENAI STURGEON CRITICAL HABITAT  
(1-9-01-F-0279R)



February 18, 2006

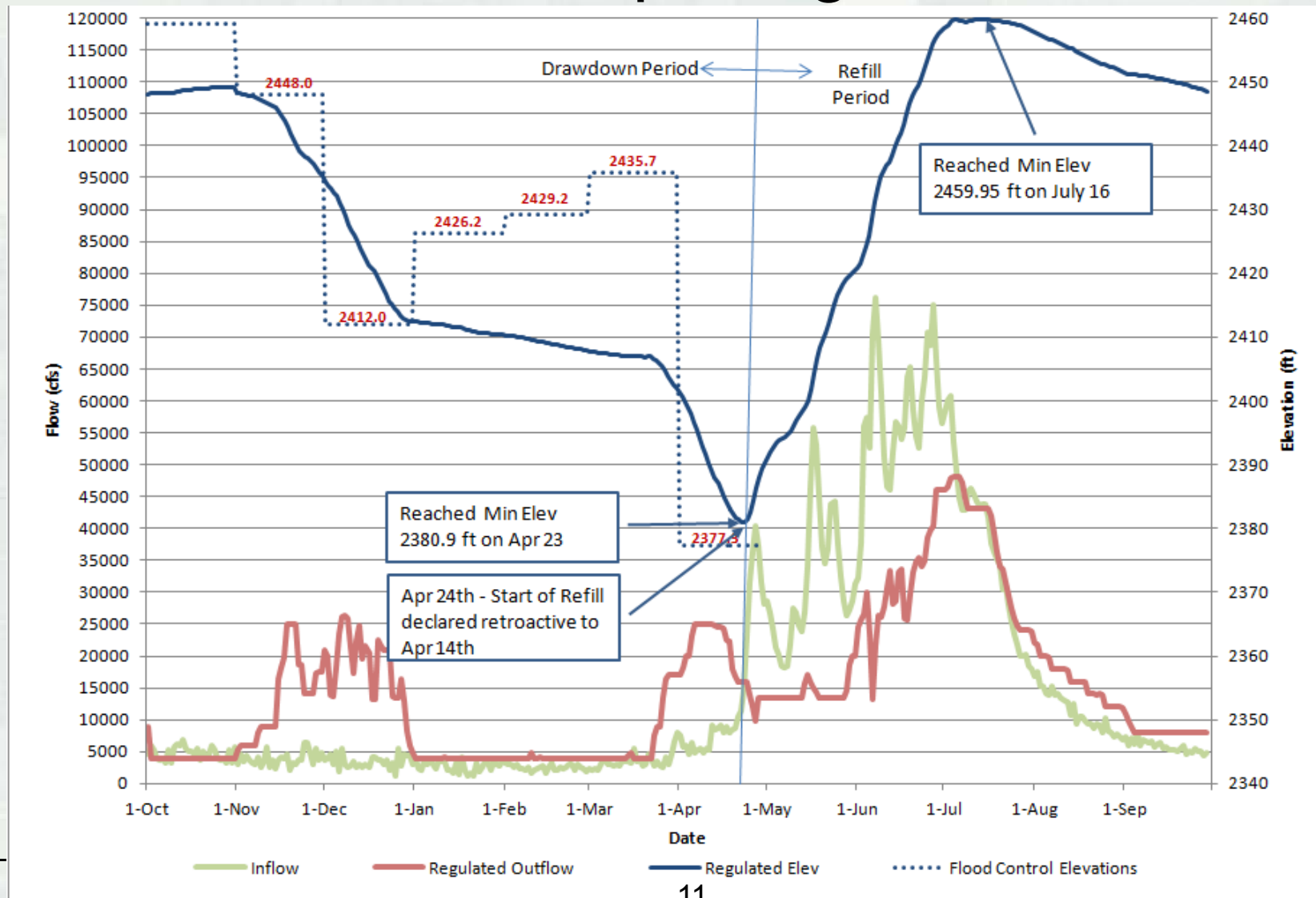


# “Average” Libby Water Year, 5.885 MAF Apr-Aug Volume

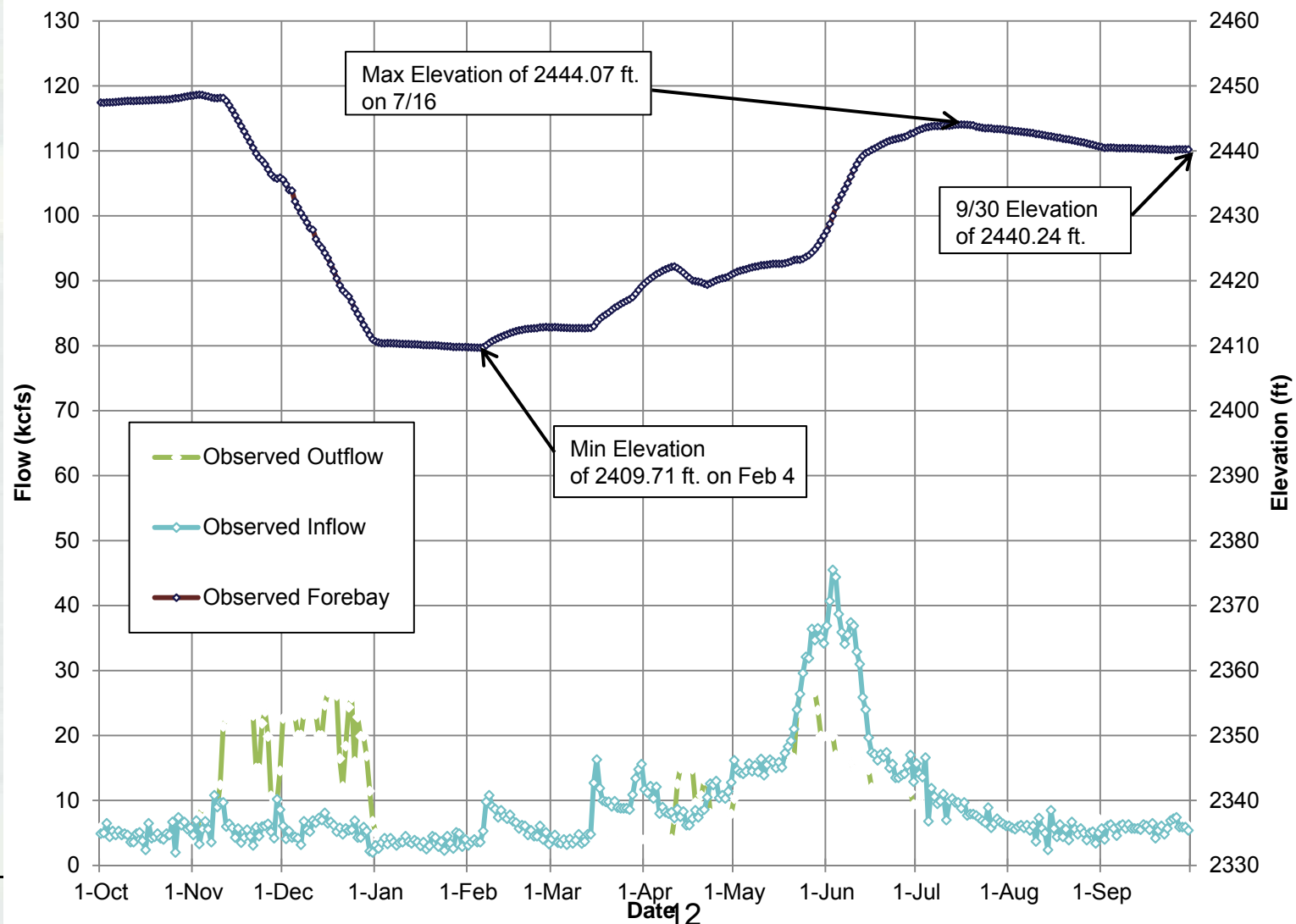


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# Large Water Year (2012), 9.195 MAF Apr-Aug Volume



# Small Water Year (2015), 4.225 MAF Apr-Aug Volume

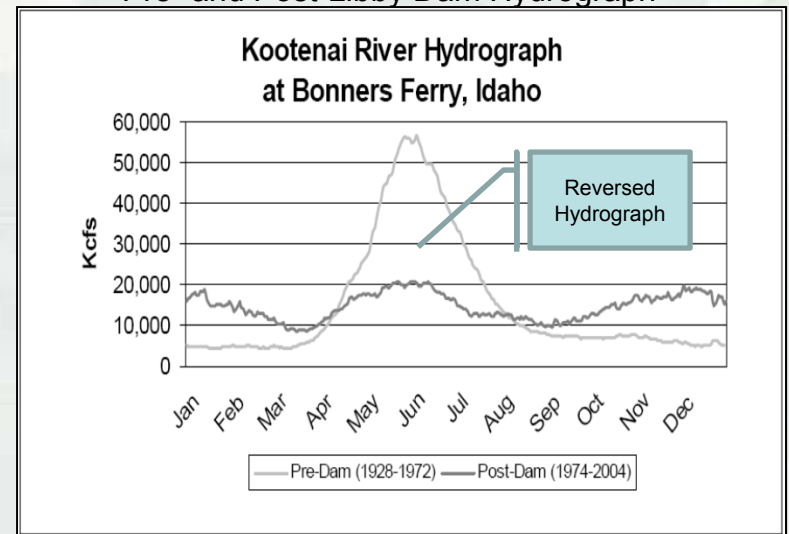




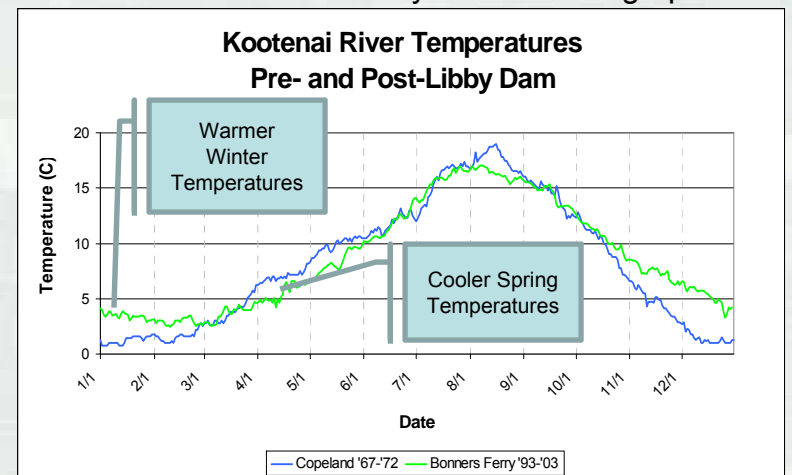


# Libby Dam Effects on Kootenai River Ecosystem

Pre- and Post-Libby Dam Hydrograph

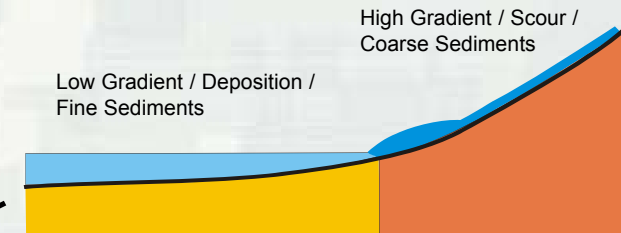
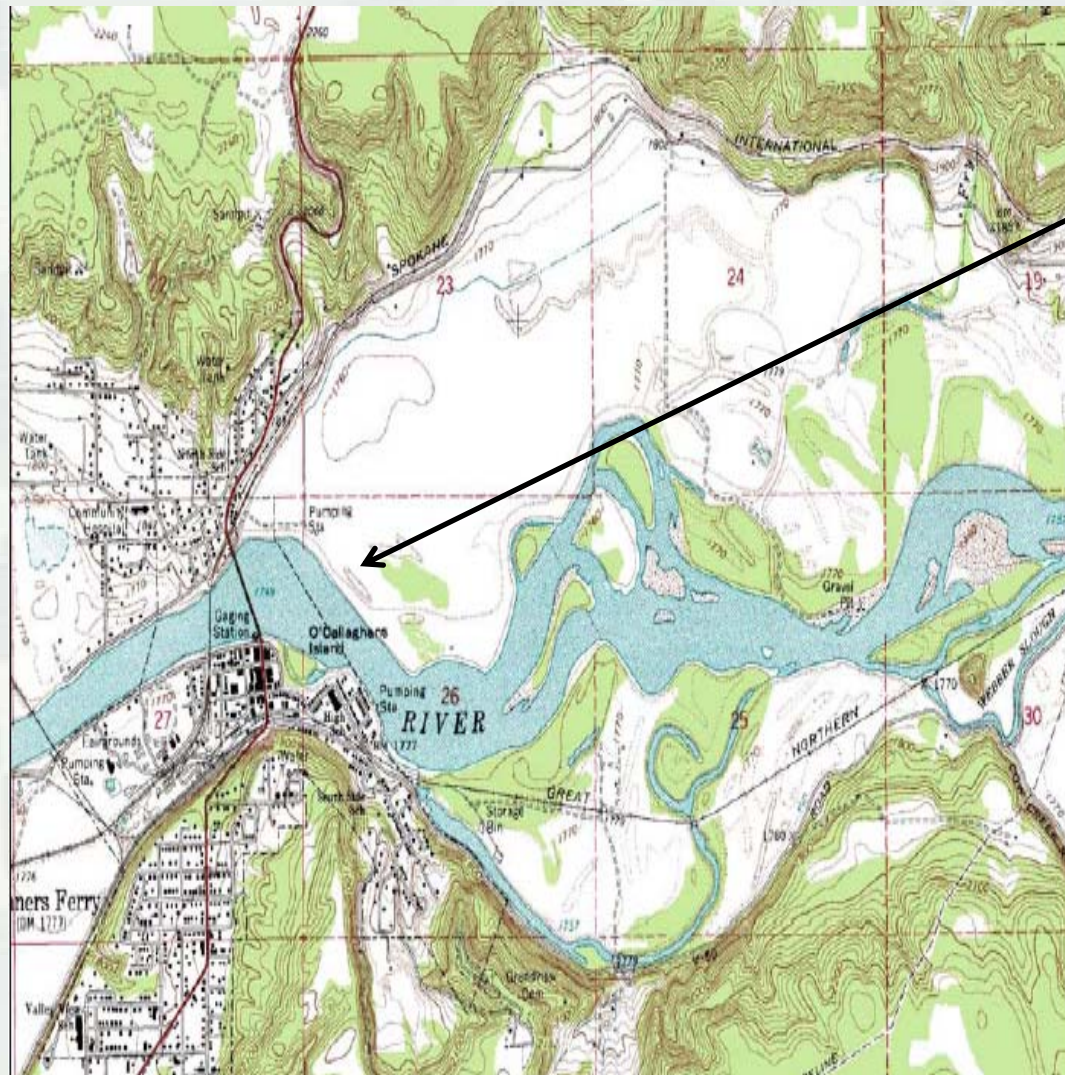


Pre- and Post-Libby Dam Thermograph



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# River and Lake Regulation Effects in Kootenai River at Bonners Ferry, Idaho



Regulation of the Kootenai River at Libby Dam and of Kootenay Lake at Corra Linn Dam alters depth and location of Kootenay Lake / Kootenai River backwater interface at Bonners Ferry, Idaho.

Sturgeon now spawn in deep water over sand and silty substrates – no survival of eggs.





# Kootenai River White Sturgeon Recovery Team





# Sturgeon / Ecosystem Habitat Enhancement

Center for Biological Diversity  
Lawsuit Settlement Agreement

Clarified USFWS BiOp RPA's

Corps and BPA to fully support  
KTOI Ecosystem Habitat  
Restoration Projects



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# Conclusion

## ▪ Take Aways:

- ▶ Libby Dam provides flood control, hydropower, and recreation for the mutual benefit of the USA and Canada
- ▶ Endangered Species Act considerations complicate Libby Dam's operation
- ▶ Libby Dam is a key component in the Columbia River Treaty and operates within the framework of the International Joint Commission Order for Kootenay Lake

## ▪ Questions: ???



# Trivia

- **Does Libby change operations of Kootenay Lake?**

- ▶ Yes, the Corps worked closely with BC Hydro in both 2011 and 2012 to minimize lake levels where possible

- **Questions: ???**



# Questions: ???



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