Upper Mississippi Water Level Management

September 28, 2016

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US Army Corps of Engineers
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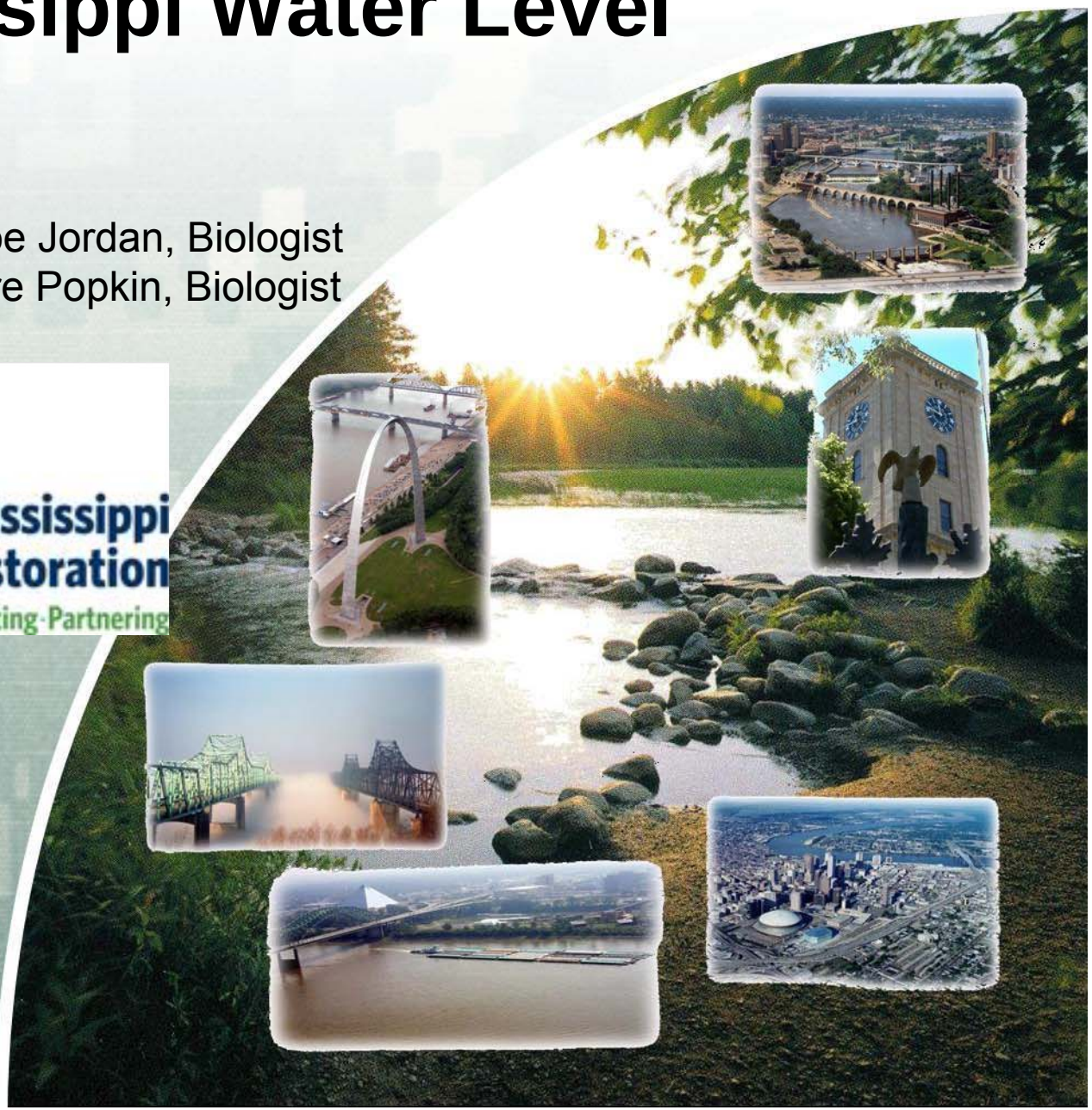

Objectives of Water Level Management

- Hydraulics
- Geomorphology
- Biogeochemistry
- Habitat
- Biota

Andalusia Slough Pump Station

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Hydraulics

- Water level manipulation
- Restore natural seasonal hydrology
- Reach highs and lows

Bay Island Water Control Structure

Geomorphology

- Alter sedimentation

  Dry out and consolidate

  Reduce erosion

  Stabilize

- Bathymetric diversity

Lake Chautauqua

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Biogeochemistry

- Using vegetation:
  - ▶ Aquatic and emergent
  - ▶ Nutrient cycling
  - ▶ Dissolved oxygen

Keithsburg aquatic vegetation

- Reduce sediment re-suspension

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Habitat & Biota

- Improve overall quality
- Make habitats available
- Restore diverse, native communities

Banner Marsh Muskie

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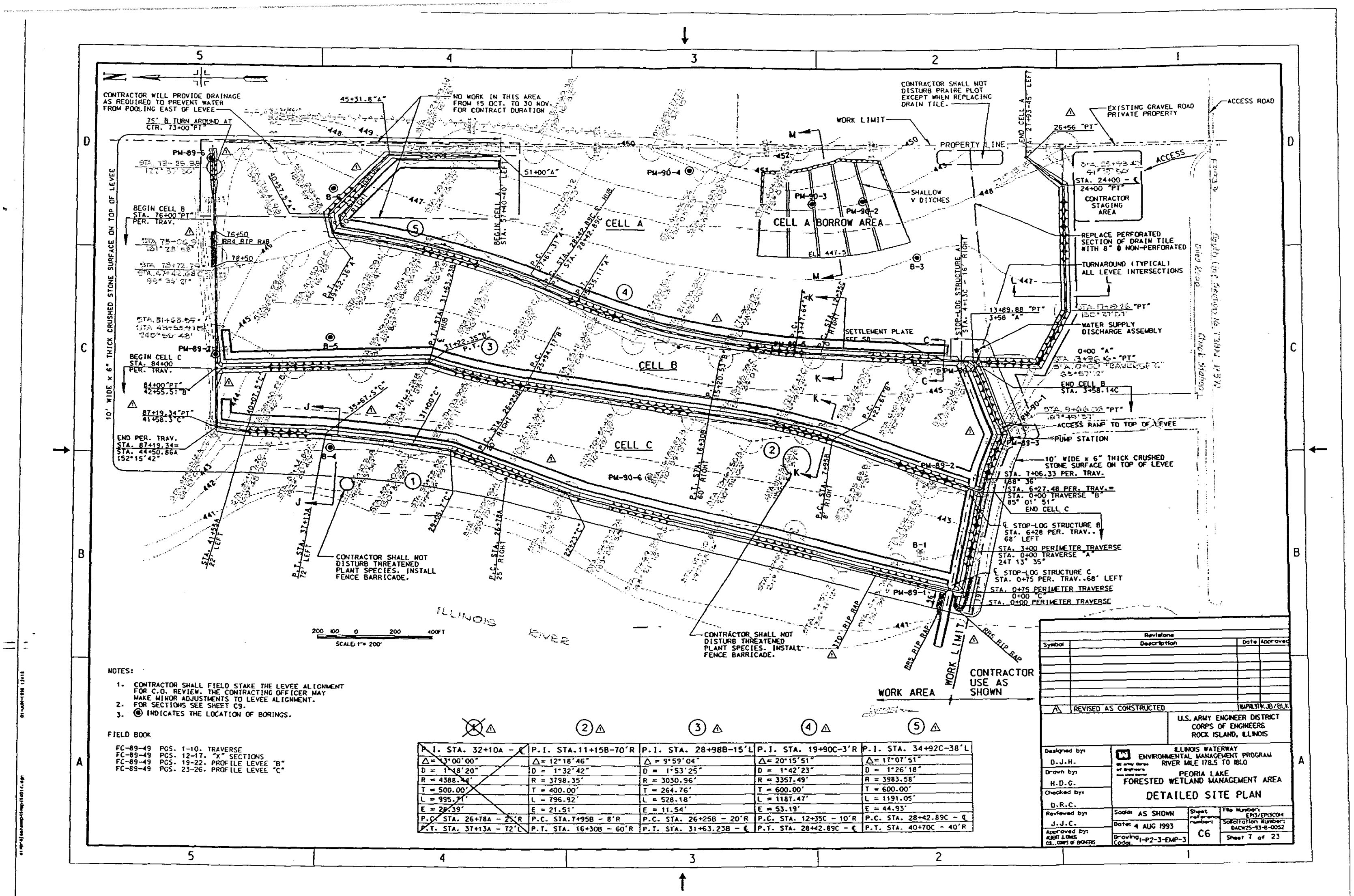
Types of WLM

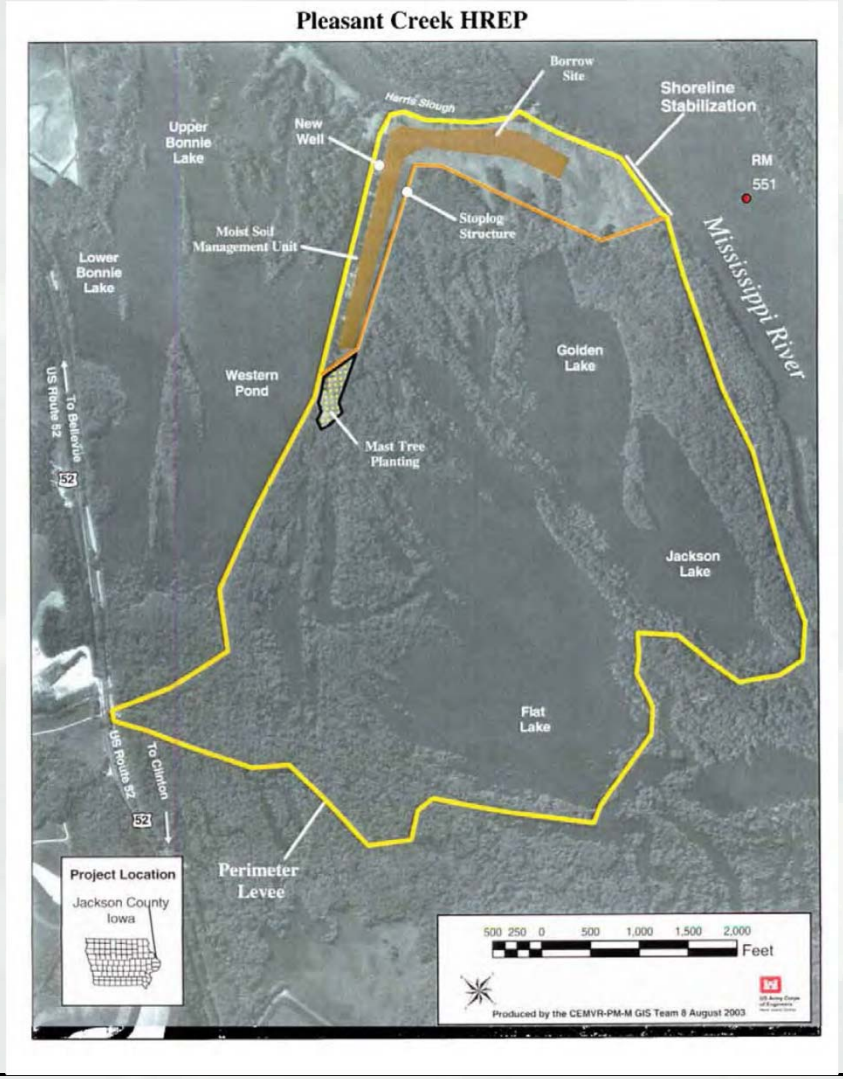
- Moist Soil Management
- Pool Level Changes
- Backwater Lakes

MSU



CELL A
CELL A BORROW AREA
CELL B
CELL C
ILLINOIS RIVER
WORK LIMIT
PROPERTY LINE
ACCESS ROAD
CONTRACTOR STAGING AREA
PUMP STATION
WORK AREA
CONTRACTOR USE AS SHOWN
NOTES:
1. CONTRACTOR SHALL FIELD STAKE THE LEVEE ALIGNMENT FOR C.O. REVIEW. THE CONTRACTING OFFICER MAY MAKE MINOR ADJUSTMENTS TO LEVEE ALIGNMENT.
2. FOR SECTIONS SEE SHEET C9.
3. INDICATES THE LOCATION OF BORINGS.
FIELD BOOK
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS
ILLINOIS WATERWAY ENVIRONMENTAL MANAGEMENT PROGRAM RIVER MILE 178.5 TO 180.0
PEORIA LAKE FORESTED WETLAND MANAGEMENT AREA
DETAILED SITE PLAN
REVISED AS CONSTRUCTED
Date: 4 AUG 1993
C6
Sheet 7 of 23

Backwater Lake



WLM Projects

Bussey Lake, IA	Bay Island, MO	Clarksville Refuge, MO	Huron Island, IA
Finger Lakes, MN	Chautauqua Refuge, IL	Cuivre Island, MO	Boston Bay, IL
Guttenberg Waterfowl Ponds, IA	Lake Odessa, IA	Dresser Island, MO	Delair Division, IL
Long Meadow Lake, MN	Peoria Lake, IL	Stump Lake, IL	Keithsburg Division, IL
Pool Slough, IA, MN	Pleasant Creek, IA	Swan Lake, IL	Turkey R. Bottoms Delta and Backwater, IA, WI
Rice Lake - MN	Potters Marsh, IL	Conway Lake, IA	Ted Shanks, MO
Small Scale Drawdown, WI	Princeton Refuge, IA	Bass Ponds, Marsh, and Wetland, MN	Rip Rap Landing, IL
Trempeleau, WI	Spring Lake, IL	North and Sturgeon Lakes, MN	Clarence Cannon, MO
Andalusia Refuge, IL	Batchtown, IL	Fox Island, MO	Glades Wetland Complex, IL
Banner Marsh, IL	Calhoun Point, IL	Rice Lake-IL	Godar Refuge, IL
			Red's Landing Wetlands, IL

HREP_WLM.kmz

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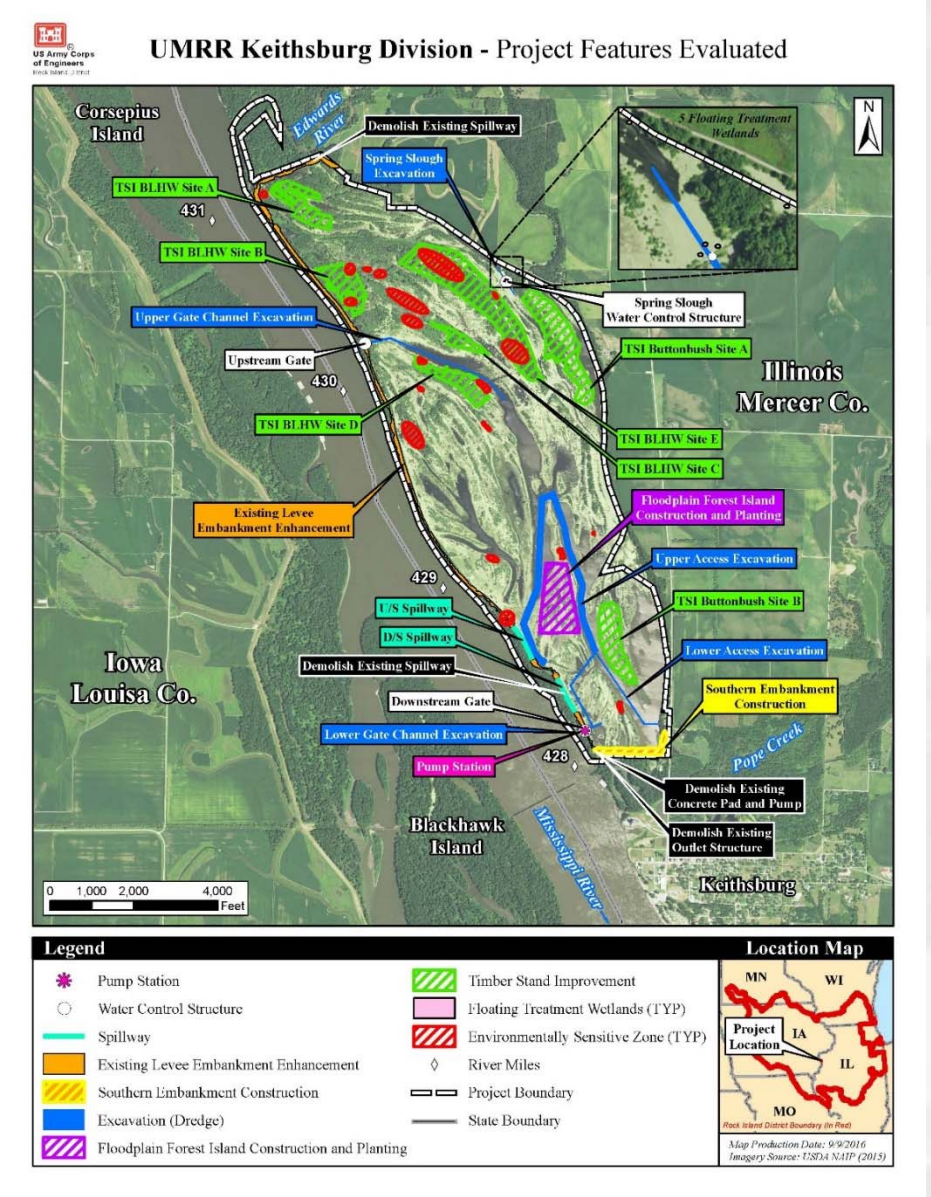
Lessons Learned Keithsburg Division

- Located at Keithsburg, Illinois RM 429
- Issues:
  - ► Levee/Levee Breech
  - ► Railroad bridge
  - ► Pump Stations
  - ► Spillway



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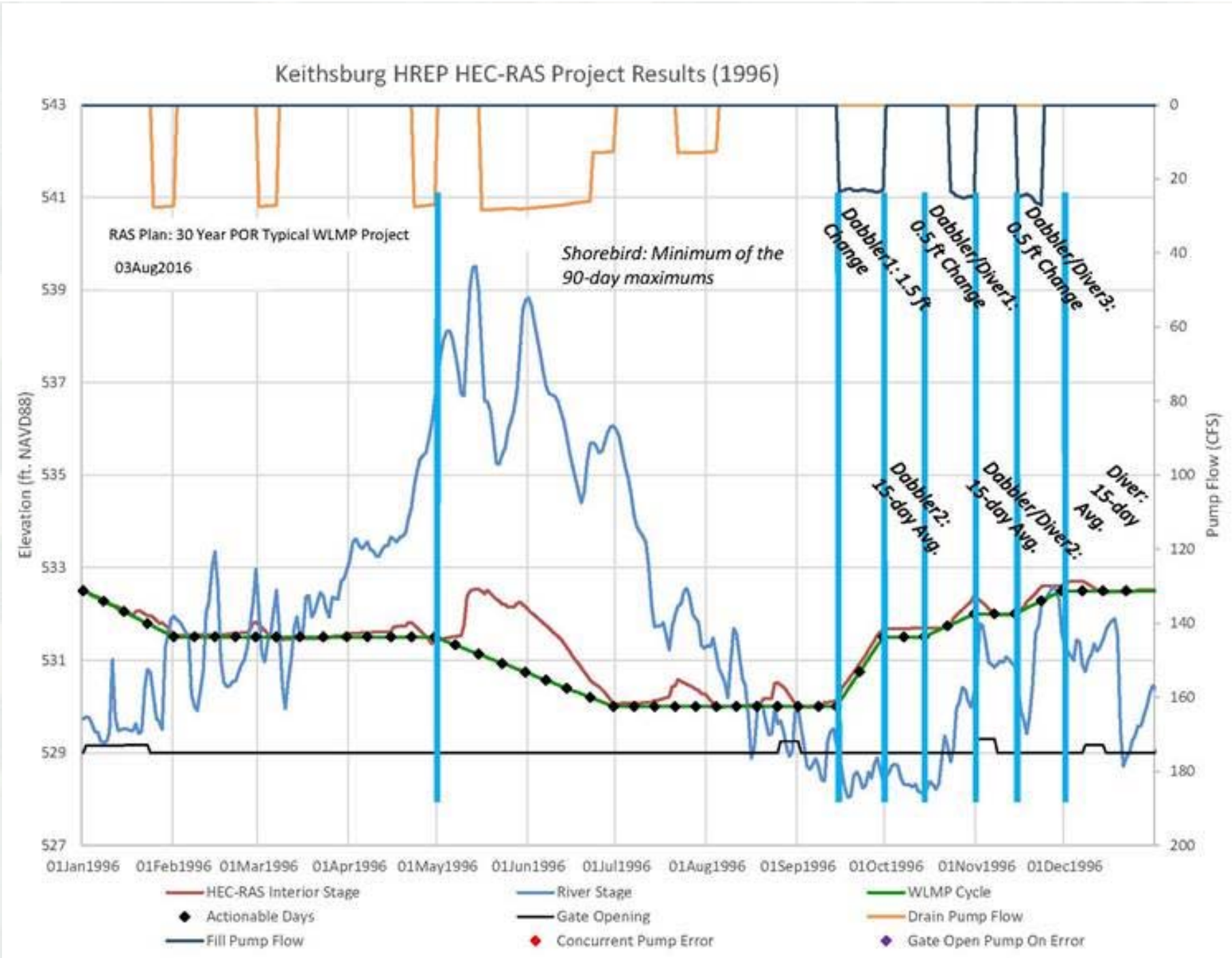
Lessons Learned: Keithsburg, Illinois

Timing	Action	Purpose
July to Sept	Maintain water levels	Expose mudflats for shorebird migration and allow for emergent vegetation growth
Oct to Nov	Gradually increase and maintain water levels	Provide access to aquatic food plants for migratory waterfowl
Dec to April	Decrease water levels*	Reduce ice damage on bottomland forest
May to June	Gradually decrease water levels	Prepare for aquatic plant germination

Additional bottomland hardwood and buttonbush management


Keithsburg HREP HEC-RAS Project Results (1996)
RAS Plan: 30 Year POR Typical WLMP Project
03Aug2016
Shorebird: Minimum of the 90-day maximums
Dabbler1: 1.5 ft Change
Dabbler/Diver1: 0.5 ft Change
Dabbler/Diver3: 0.5 ft Change
Dabbler2: 15-day Avg.
Dabbler/Diver2: 15-day Avg.
Diver: 15-day Avg.
Elevation (ft. NAVD88)
Pump Flow (CFS)
543
541
539
537
535
533
531
529
527
0
20
40
60
80
100
120
140
160
180
200
01Jan1996
01Feb1996
01Mar1996
01Apr1996
01May1996
01Jun1996
01Jul1996
01Aug1996
01Sep1996
01Oct1996
01Nov1996
01Dec1996
HEC-RAS Interior Stage
River Stage
WLMP Cycle
Actionable Days
Gate Opening
Drain Pump Flow
Fill Pump Flow
Concurrent Pump Error
Gate Open Pump On Error

Comments?

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