

Kootenai National Wildlife Refuge Habitat Management for Summer/Fall 2023

Overview

Center Refuge

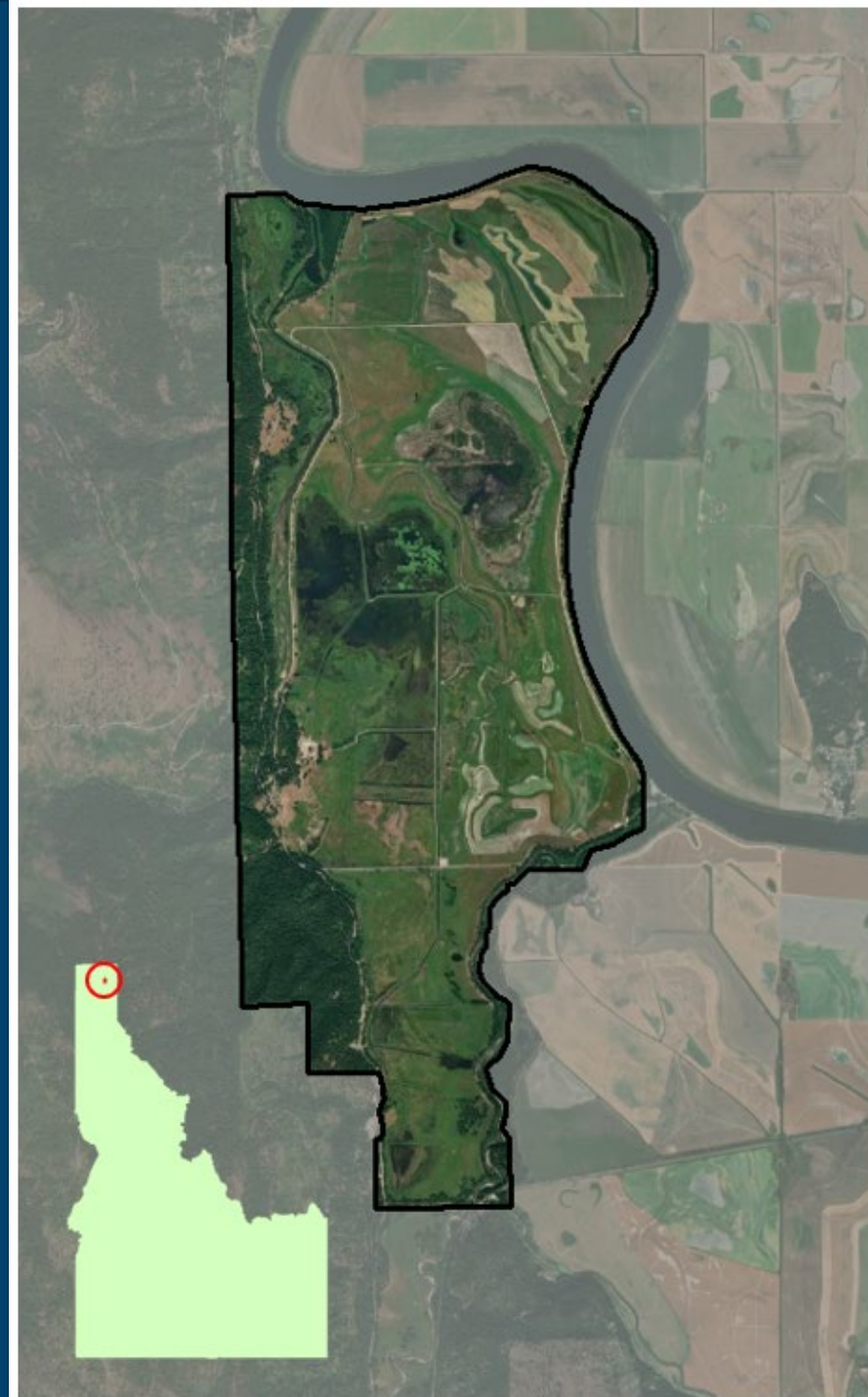
Cascade/
Cottonwood

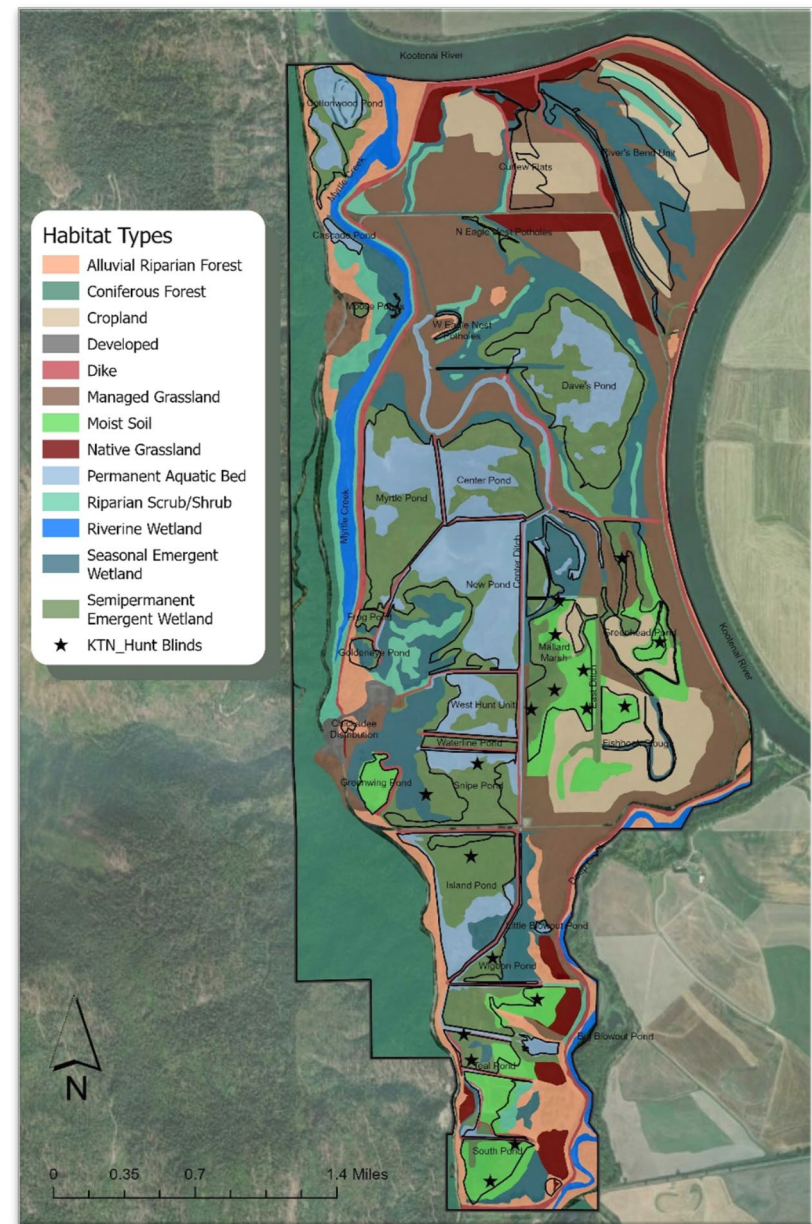
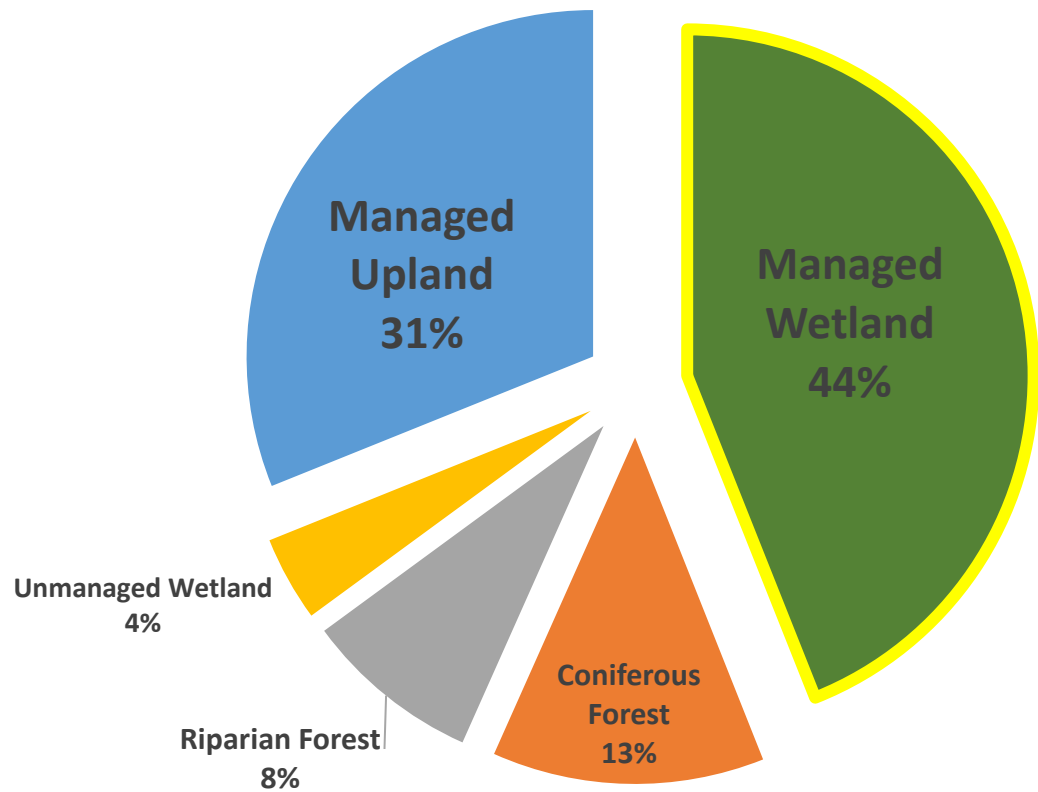


NATIONAL
WILDLIFE
REFUGE SYSTEM

Kootenai NWR

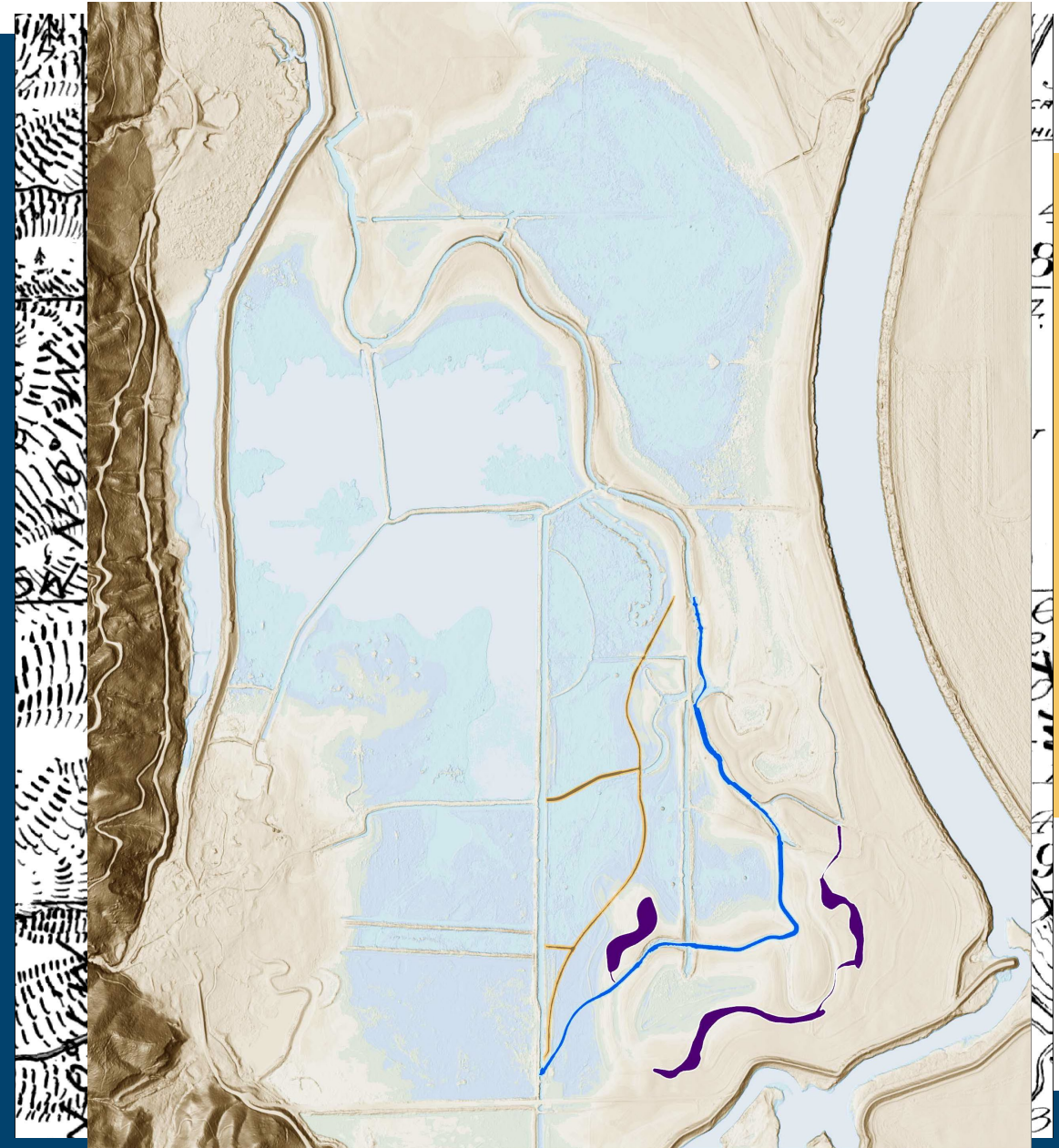
- **2,774 acres**
- **Established in 1964**
- **Purpose**
 - Resting and breeding waterfowl habitat
 - Alleviate crop depredation
 - Preserve flora/fauna diversity
 - Management-oriented research
 - T&E species habitat
 - Provide visitor services





Habitat Improvements–Center Refuge

- Utilizing topographic features



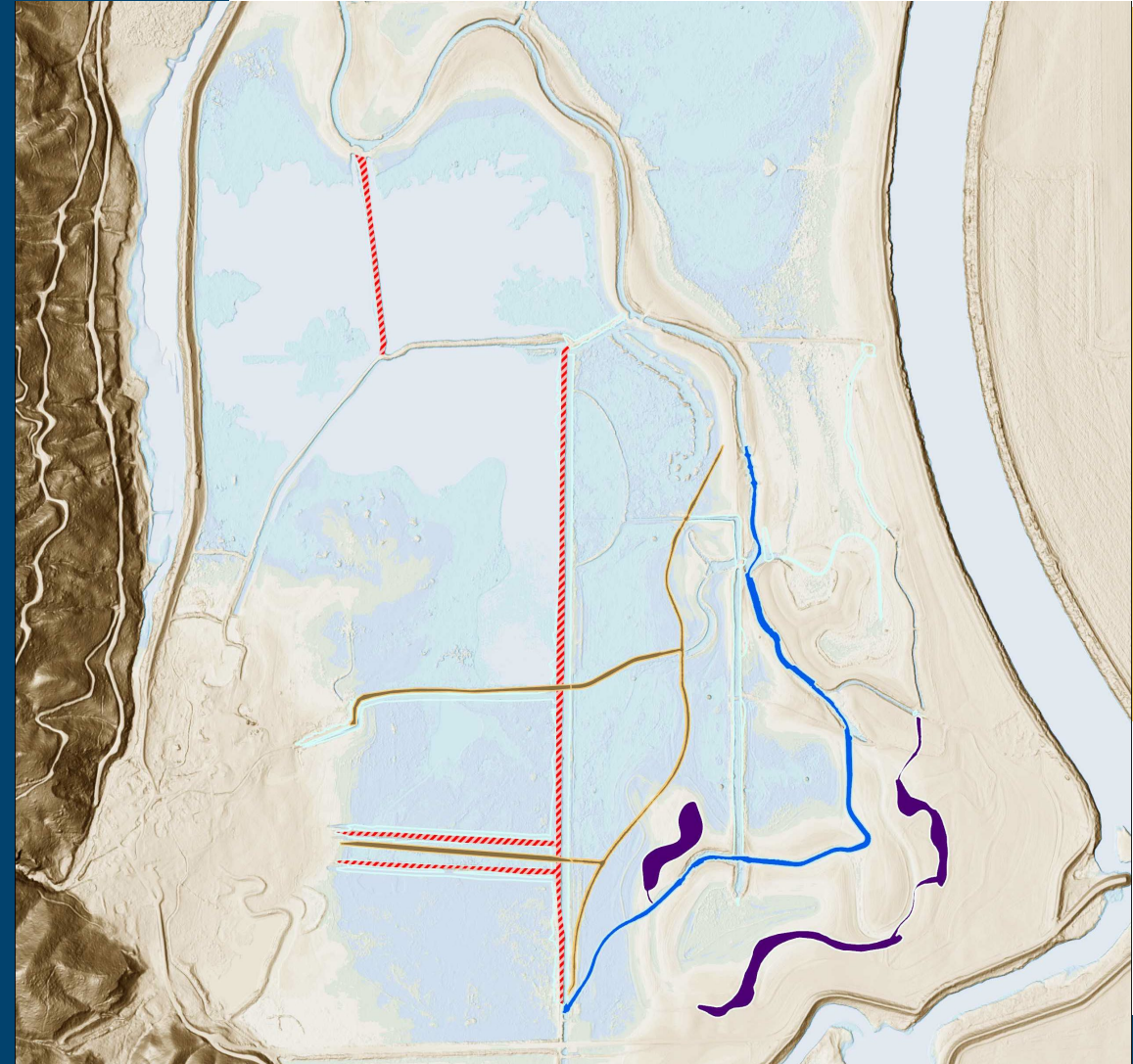
Habitat Improvements—Center Refuge

- Utilizing topographic features
- Low maintenance levee design
- Efficient water control structures



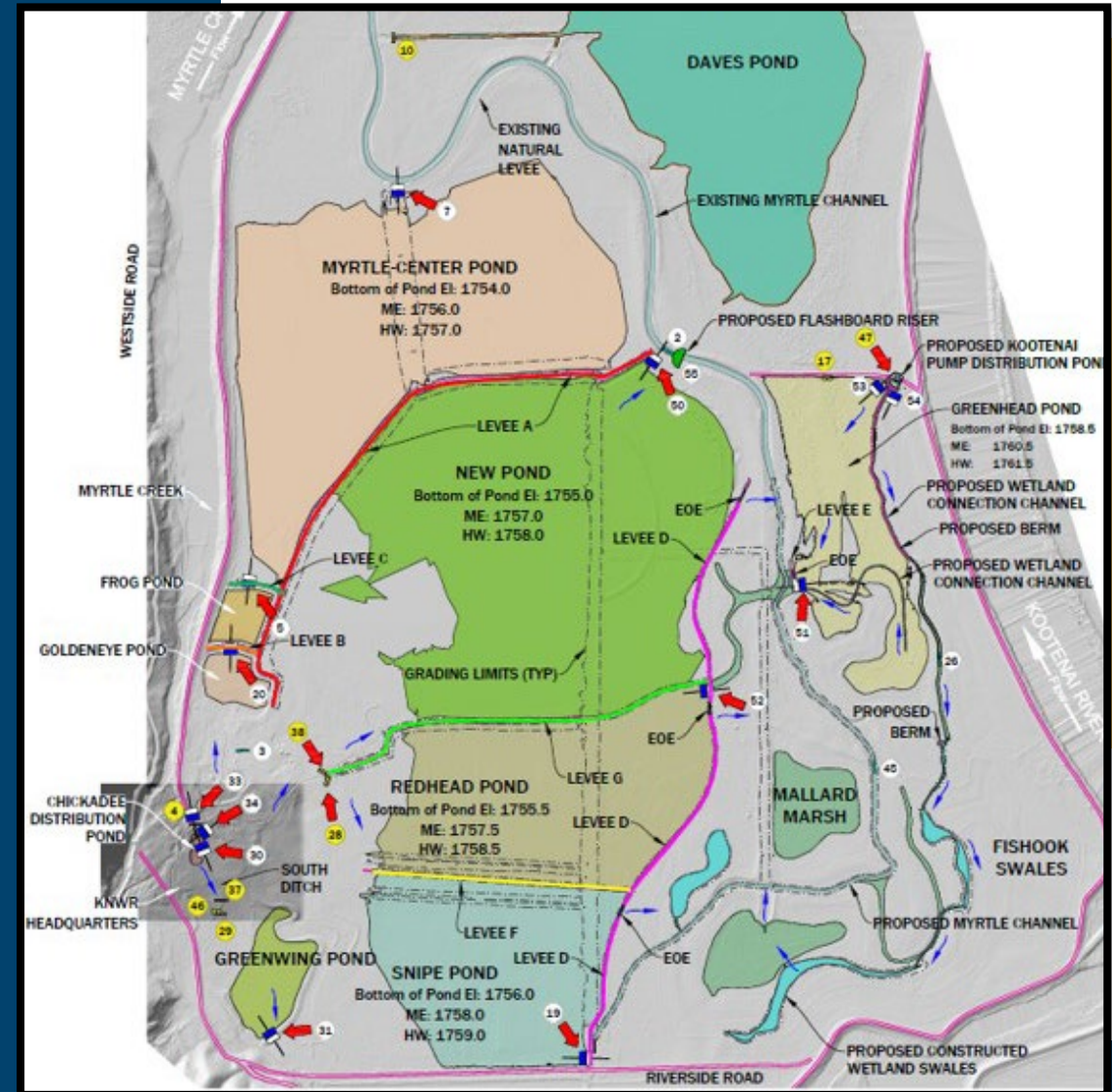
Habitat Improvements—Center Refuge

- Utilizing topographic features
- Low maintenance levee design
- Efficient water control structures
- Removing unnecessary infrastructure



Habitat Improvements—Center Refuge

- Utilizing topographic features
- Low maintenance levee design
- Efficient water control structures
- Removing unnecessary infrastructure
- Precise design specifications

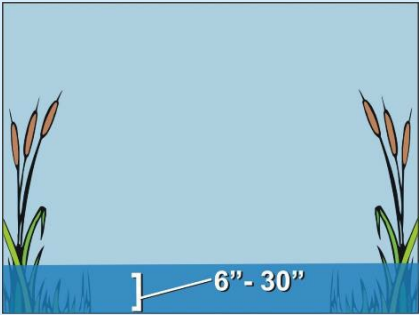




Main Objectives of Habitat Actions



01.



02.



03.

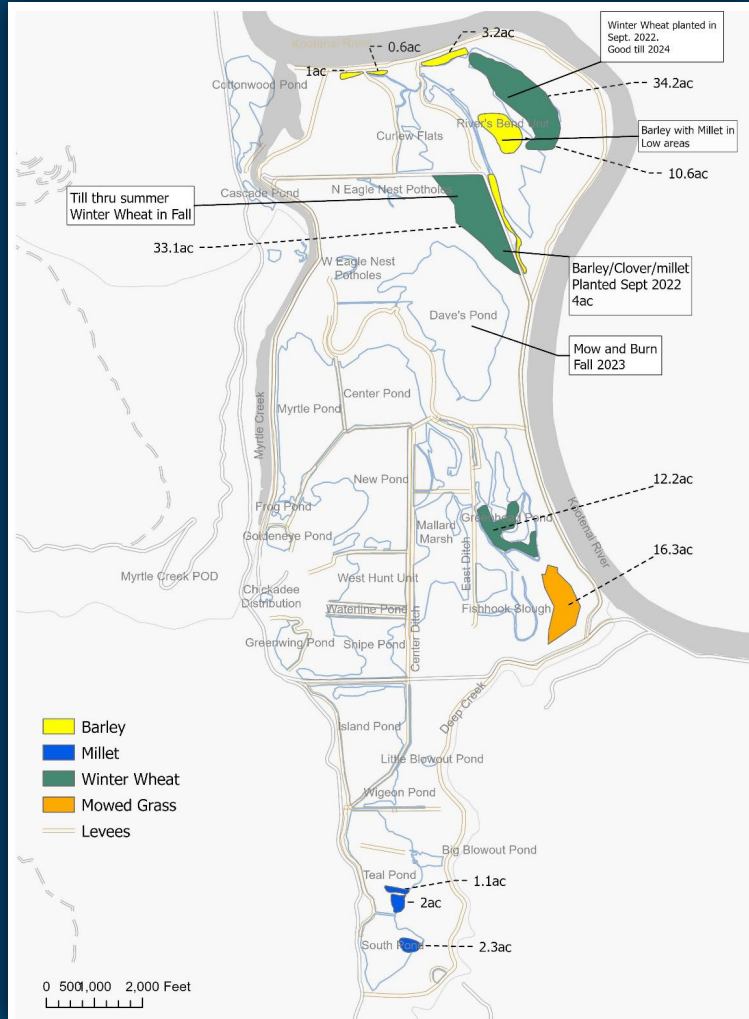


Habitat Improvements- Center Refuge

- Deferred Maintenance
- Maintenance Action Teams
- GAOA funding



Preparation

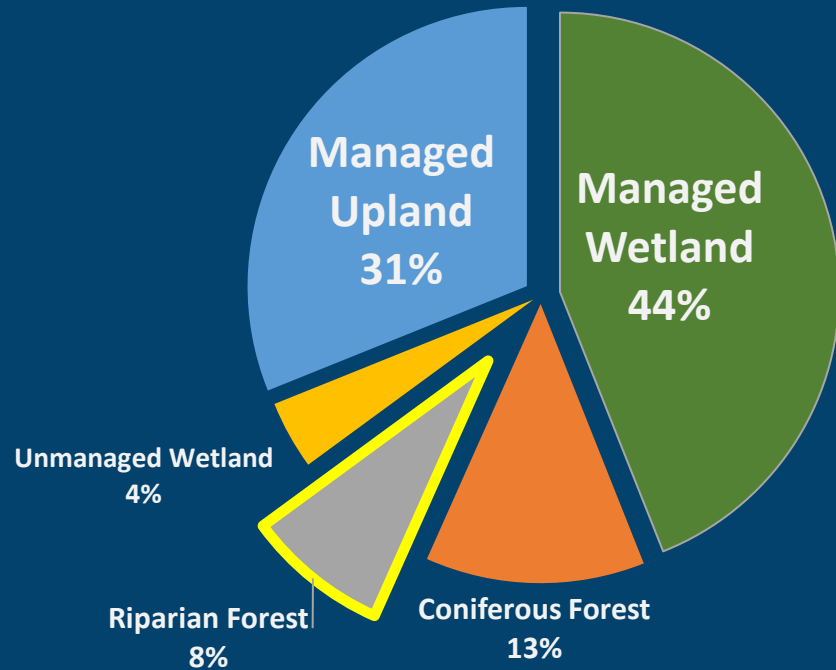


Tools in our Management Box

- Water
- Physical
- Fire
- Chemical
- Infrastructure

KTN Westside Habitat Project

- Partnership with KTOI
- Riparian Forest/
Riparian Scrub



Westside Projects Restoration Opportunities that Support KRHRP Objectives



Food Web

Improve riparian function and nutrient exchange by increasing floodplain connection and expanding the availability of areas that will support riparian and wetland vegetation



Geomorphology

Promote geomorphic sustainability by introducing large wood and creating features that consider the governing sediment transport processes



Fish

Enhance aquatic habitat by supporting nutrient exchange and primary productivity with the Kootenai River via tributaries; provide food sources for early life stage fish



Habitat

Increase habitat diversity with increased cover of woody vegetation in the floodplain of tributary streams



Stewardship

Promote ongoing conservation efforts in coordination with the Refuge

Site 1: Cascade Creek

Existing Conditions & Limiting Factors

- **Cascade Creek alluvial fan below Westside Road.**
- Intermittent flows in Cascade Creek
- Decadent cedars-lack of regeneration
- **Damaged diversion structure-supplies water to Cascade & Cottonwood Ponds**
- **Berms around constructed ponds limit alluvial fan connectivity-West Moose Pond**



West Moose Pond



- CASCADE CREEK AREA
- FLOODPLAIN ROUGHNESS & MICROTOPOGRAPHY
 - LOWER EXISTING BERM
 - ✘ BREACH EXISTING BERM
 - REPLACE DIVERSION STRUCTURE

Site 1: Cascade Creek

Proposed Actions

- Replace Cascade Crk. diversion structure
 - Allow for upstream fish passage
 - Egress to downstream ponds & Myrtle Creek
- Breech berms at West Moose Pond
 - Restore alluvial fan connectivity
- Place large wood pieces in floodplain
 - Trap additional debris & promote alluvial fan processes



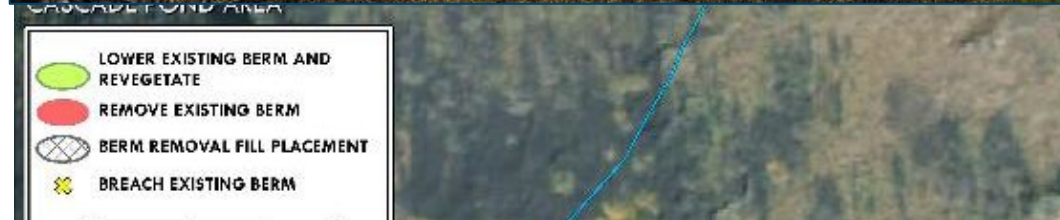
Site 2: Cascade Pond

Existing Conditions & Limiting Factors

- Constructed Pond
- Receives water from Cascade creek diversion
- Drains north to Cottonwood Pond & south to Cascade Creek
- Limited woody vegetation due to dense RCG
- Harmful algal bloom in 2021



East berm of Cascade Pond



Site 2: Cascade Pond

Proposed Actions

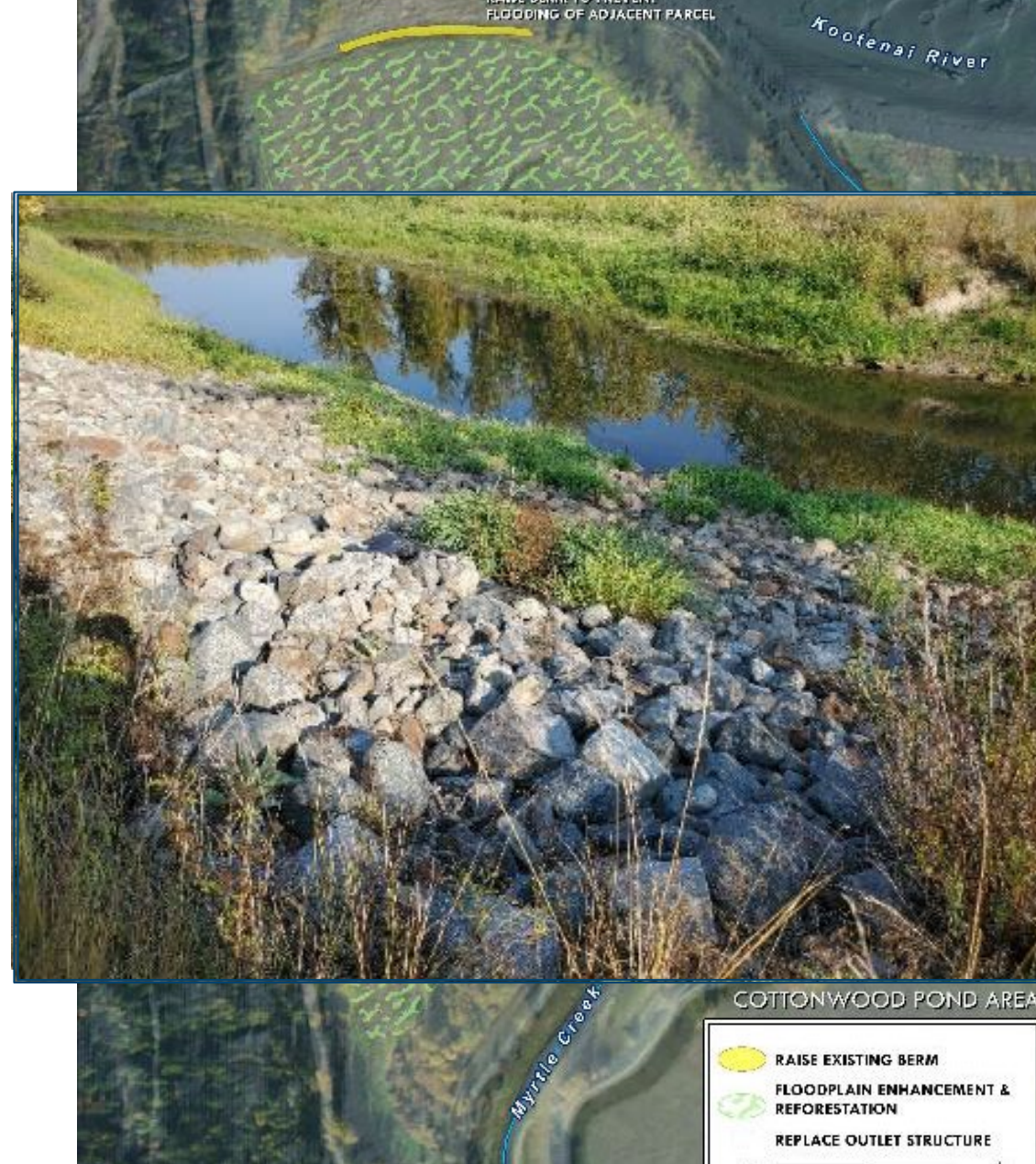
- Lower berms & bridge approach fill area
- Create conditions to support woody vegetation around pond
- Maintain north outlet elevation to support wetlands
- Remove RCG on berms, plant trees & shrubs to restore woody vegetation
- Plant with dense brush to deter browse



Site 3: Cottonwood Pond

Existing Conditions & Limiting Factors

- **Constructed pond with water control structure at outlet**
- Water supply from Cascade Pond & groundwater
- **Kootenai River backwater present**
- **Drains to Myrtle Creek via outlet structure**
- **Low berm on north side of pond**
- **Cottonwood, alder, & others around edges of pond; bullrush, RCG in pond**



Site 3: Cottonwood Pond

Proposed Actions

- **Replace outlet with natural channel to Myrtle Creek**
- Large wood in outlet channel for stability
- **Lower water surface elevation will promote restoration of woody wetland vegetation**
- **Raise berm on north end of pond with material excavation at other sites**



Site 4: Myrtle Creek

Existing Conditions & Limiting Factors

- Lower reaches of Myrtle Creek
- South, upstream of Cascade Creek mouth
- Kootenai River backwater present
- Auto-tour route levee on east side of creek
- RCG dominated floodplain



Site 4: Myrtle Creek

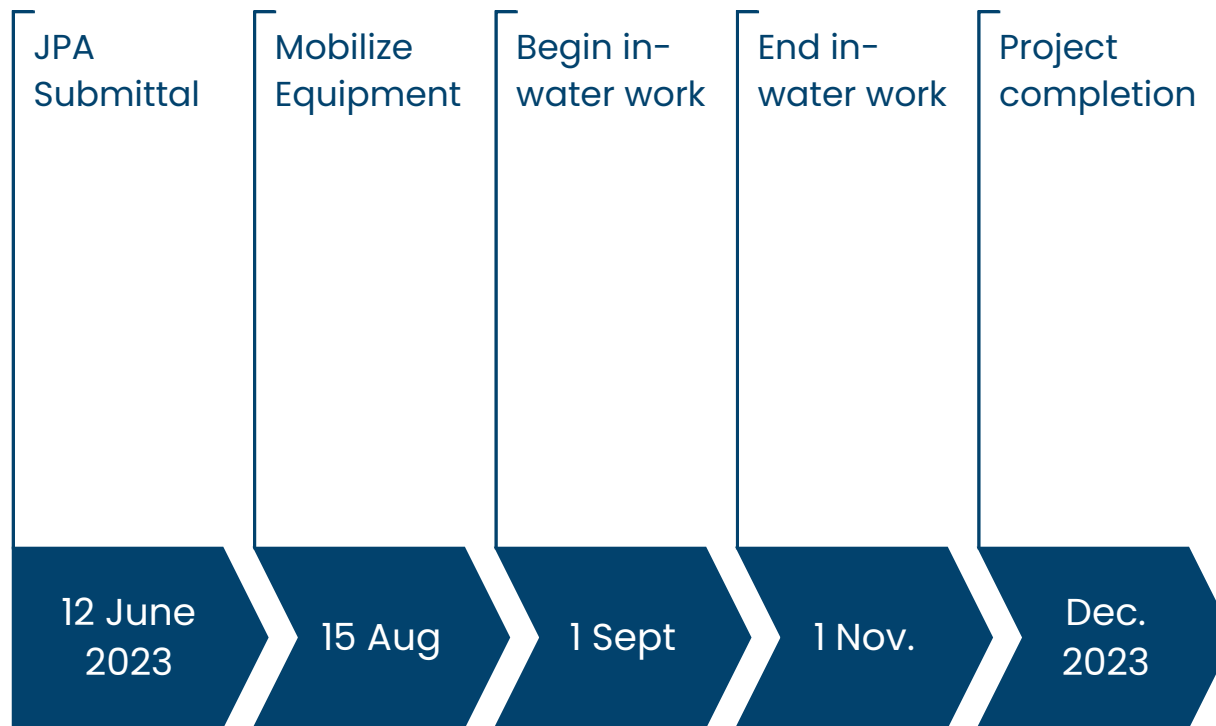
Proposed actions

- Selectively remove RCG to create conditions for woody vegetation re-establishment
- Place excess material along Myrtle Creek & plant with brush
- Consider a seasonal side channel on west side of creek





Project Benefits Summary





Questions?