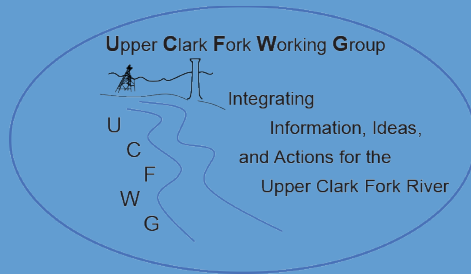


UCFWG FIELD WORKSHOP

AUGUST 18, 2021
Recap



With support from:



PHASE 2 OXBOW



UCFWG STRATEGIC PLAN

The Upper Clark Fork Working Group's Mission is to facilitate, produce, analyze and share science-based knowledge among key participants involved in the remediation, restoration, research, and monitoring of the Upper Clark Fork River and its tributaries.

FIELD WORKSHOP AGENDA

- Provided background information about history and status of remediation and restoration work
- Described field assignment—visit two sites with your group and fill out your “Ecological Components” form documenting what is present and lacking from your perspective and expertise
- Reconvened and shared our findings
- Summarized and discuss where we go from here
- Shared food and good company
- Hosted by Clark Fork Coalition at their Dry Cottonwood Field Center
- Supported by University of Montana and Natural Resource Damage Program

UPPER CLARK FORK RIVER FIELD WORKSHOP

Site Assessment, August 18th 2021

Site Name: _____ Remediated Non-Remediated

Participant Name: _____ Affiliation: _____

Check all that apply in each section below:

Role: Natural Resource Manager Researcher Educator Student Citizen Scientist
 Tribal Representative NGO Professional Consultant Policy Maker Private business
 Other _____

Expertise: Animal Biology Plant Biology Soils Hydrology Environmental Chemistry Ecology
 Engineering Social / Cultural Recreation Regulatory Funding
 Other _____

What approaches do you usually use for site investigations in your field of expertise?

Sampling for research Sampling for management Limiting factors for restoration potential
 Functional assessment for wetlands Habitat suitability for biological components
 Exploration for design conceptualization Risk assessment for design engineering
 Feasibility for construction implementation Design assessment for regulatory compliance
 Proposed action scope for cultural resource conservation Proposed action scope for public access
 Other _____

From the unique lens of your expertise, please consider ecological components either present or lacking at this site. Think of component functions across both time and space. As examples, you may consider ecological processes such as flow and sediment transport; biological components such as habitat niches, species, and life stages; physical components such as water quality, structure, and complexity; or holistic processes such as ecosystem services.

Components Present	Components Lacking

Field Form

Components Present (cont.)

Components Lacking (cont.)

Use this space to write down any ecological, technical, or logistical questions that occurred to you at this site.

Field Form



REWEATED PHASE II

EX. 116

COMPLEXITY
HYPERBOLIC RETENTION
POINT BAR DEPOSIT.
EMBEDDED SUBSTRATE
STEP BANK / UNCLIFF
DEEP CHANNEL R.
DRAINAGE PATTERN
ALGAE ON F...

PRESENT

⊗

AIN: TO
- PREDU





Upstream

Downstream

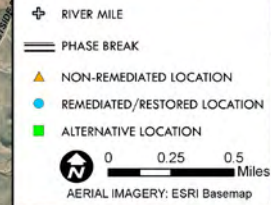
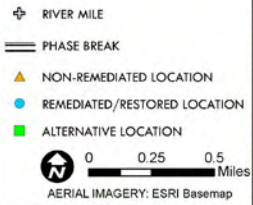
TEAMS

#1

Brian Bartkowiak
 Greg Clark
 Karen Knudsen
 Gary Swant
 Rob Thomas
 Claire Utzman

**Phase 1
 Right
 Bank**

**Phase 7
 Downstream
 Left Bank**



Upstream

Downstream

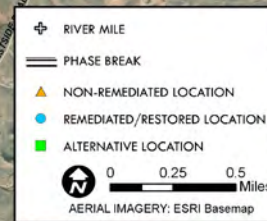
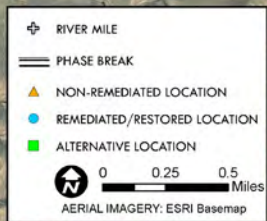
TEAMS

Phase 4,
Right Bank

Phase 2,
Downstream
Left Bank

#2

Beau Downing
 Kris Boyd
 Ken Champlain
 Andy Fisher
 Caleb Lashway
 Robert Pal
 Jose Sanchez Ruis



Upstream

Phase 6,
Downstream
Right Bank

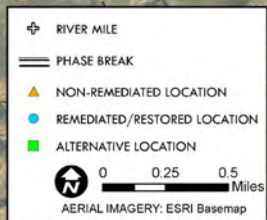
Phase 4,
Downstream
Left Bank

TEAMS

#3

Mike Hatten
Brian Balmer
Erick Greene
Alex Leone
Marco Maneta
Doug Martin
Joe Naughton

Downstream



Upstream

Downstream

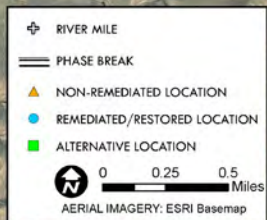
TEAMS

#4

Tom Parker
 Joel Chavez
 Lisa Eby
 Megan Fyling
 Bill Snoddy
 Will Mcdowell

Phase 1,
 Upstream
 Left Bank

Phase 10,
 Upstream
 Left Bank



Upstream

Downstream

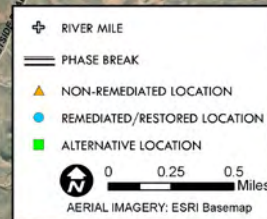
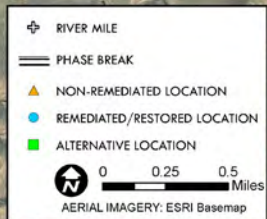
TEAMS

#5

Amy Sacry
 Matt Daniels
 Ben Colman
 Rafa Fejio
 Joe Griffin
 Casey Hackathorn
 Colton Kyro

Phase 2,
 Upstream
 Left Bank

Phase 9,
 Downstream
 Left Bank



Upstream

Downstream

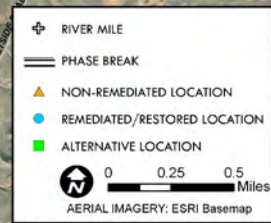
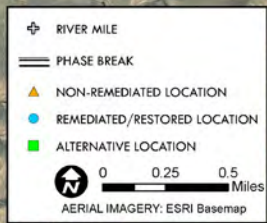
TEAMS

Phase 5,
Upstream
Right Bank

Phase 11,
Right Bank

#6

Karin Boyd
Wyatt Cross
Nathan Kohler
Taylor Gold Quiros
Maury Valett
Vicki Watson



Upstream

Downstream

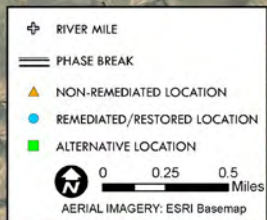
TEAMS

#7

Marisa Sowles
 Brian Chaffin
 Nathan Cook
 Mike DeGrandpre
 Robert Payn
 Travis Schmidt

Phase 5,
Upstream
Left Bank

Phase 7,
Upstream
Left Bank



ONLINE MAP HIGHLIGHTING FIELD LOCATIONS FROM AUGUST 18

https://geumserver.com/gdm/public_html/go.php?m=6a93d7df81be12470375576d84fbc4034a19f754f9

FLOODPLAIN WORKSHOP COMMON THEMES (GROUP REPORTS)

- ❖ Decadent willows and water birch present in unremediated Phases, not in remediated phases
- ❖ Willow regeneration present in remediated phases within a 10-20 ft band from river, not present in unremediated phases except where local sediment from avulsion or other disturbance
- ❖ Stream morphology was generally noted as better in remediated reaches (pools, riffles, etc.)
- ❖ High grass cover in remediated reaches
- ❖ Bird diversity noted in both remediated and unremediated reaches
- ❖ Contaminated sediments and slickens present in unremediated reaches, but noted as a risk to Phase 5 which is below non-remediated reaches
- ❖ Biological soil crust developing in Phases 2 and 5
- ❖ Redtop becoming dominant grass in both remediated and non-remediated reaches
- ❖ Trees lacking in both remediated and non-remediated reaches
- ❖ Floodplain connectivity lacking in all but Phase 1
- ❖ Noxious weeds scarce in remediated reaches

FLOODPLAIN WORKSHOP SPECIFIC OBSERVATIONS (EXAMPLES FROM FIELD FORMS)

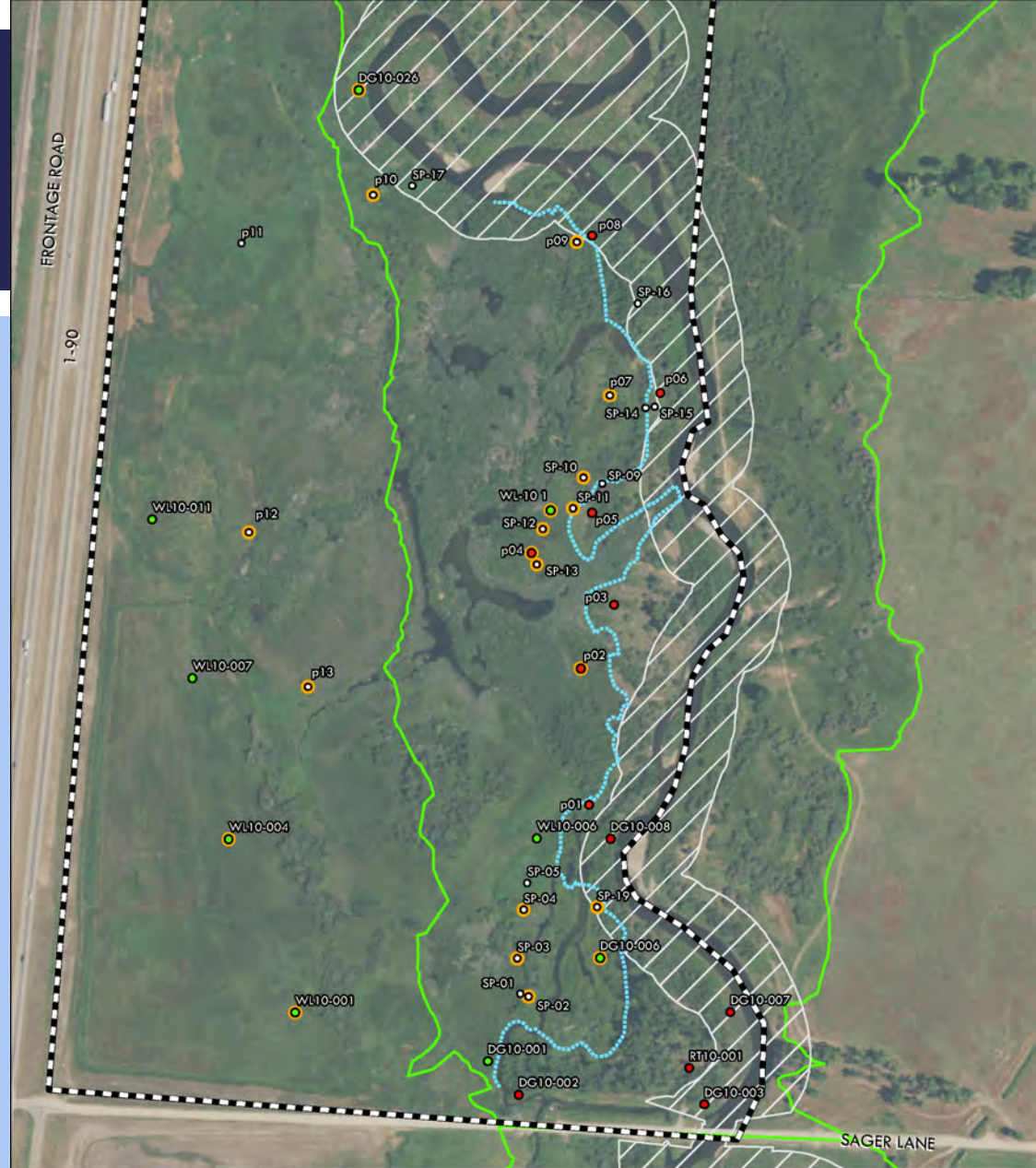
- ❖ Bare substrate lacking in areas of remediated reaches
- ❖ Soil organic matter lacking in areas with sandy borrow
- ❖ Land stewardship noted as lacking in one private, unremediated Phase
- ❖ Cattail wetlands described as artificial
- ❖ Two types of benthic habitat: Algae forming on gravel, macrophytes growing in sand
- ❖ In the same Phase, one observer noted continuous glide habitat while another noted riffle/pool sequences.
- ❖ Lack of riparian vegetation for habitat may be limiting aquatic-terrestrial linkages among food webs.
- ❖ Observers noted surprising number of native plants and high bird diversity in Phases 5 and 6.
- ❖ Public signage noted as being present by participant with more of a social science background

EXAMPLE QUESTIONS NOTED DURING THE WORKSHOP

- ❖ How to address unique habitats such as peatlands where they overlap with contaminated sediments?
- ❖ Are there ways to increase hydrologic connection between the Clark Fork River and its floodplain?
- ❖ Are there ways to preserve or engineer standing wood for cavity nesting, raptor perching?
- ❖ Can we guide management practices on private land after remediation/restoration?
- ❖ How much does sediment starvation and flow moderation from Warm Springs Ponds affect geomorphic potential?

UNIQUE HABITATS

PEATLANDS



CLARK FORK RIVER RANCH PROPERTY BOUNDARY

CONTAMINATION

- CONTAMINATED SEDIMENT NOT PRESENT
- CONTAMINATED SEDIMENT PRESENT
- SEDIMENT NOT ANALYZED FOR METALS

PEAT

- PEAT PRESENT
- APPROXIMATE PEATLAND BOUNDARY



CHANNEL MIGRATION ZONE



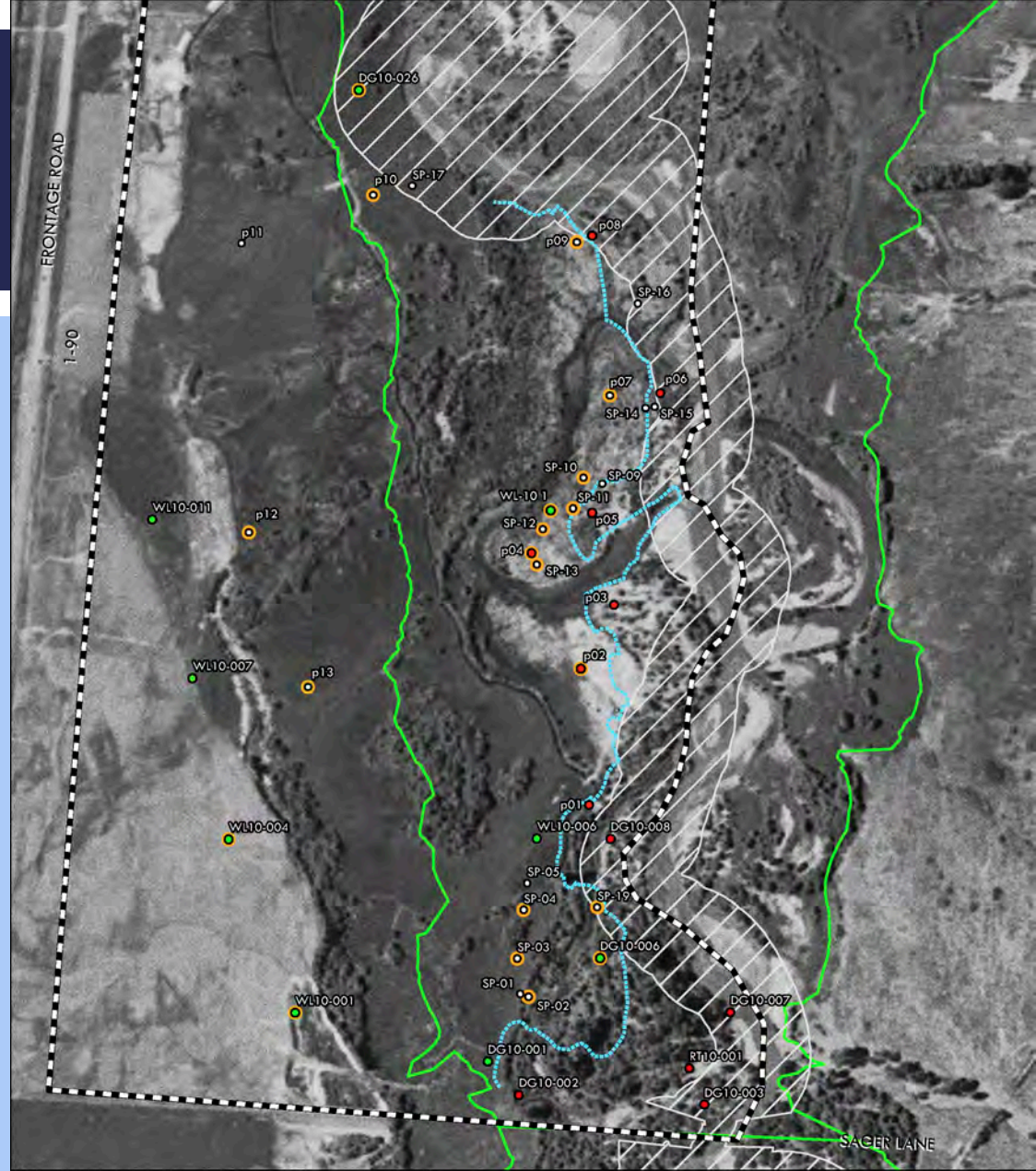
100-YR FLOODPLAIN



AERIAL IMAGERY: USDA NAIP 2019

UNIQUE HABITATS

PEATLANDS



CLARK FORK RIVER RANCH PROPERTY BOUNDARY

- CONTAMINATION**
- CONTAMINATED SEDIMENT NOT PRESENT
 - CONTAMINATED SEDIMENT PRESENT
 - SEDIMENT NOT ANALYZED FOR METALS

- PEAT**
- PEAT PRESENT
 - APPROXIMATE PEATLAND BOUNDARY

CHANNEL MIGRATION ZONE

100-YR FLOODPLAIN



UCFWG STRATEGIC PLAN

The Upper Clark Fork Working Group's Mission is to facilitate, produce, analyze and share science-based knowledge among key participants involved in the remediation, restoration, research, and monitoring of the Upper Clark Fork River and its tributaries.

UCFWG STRATEGIC PLAN GOALS

- ❖ Understand sources, sinks, and spatial/temporal patterns of metals in the UCFR main channel and relevant tributaries.
- ❖ Improve knowledge of water quality and biogeochemistry effects on aquatic species diversity and food web productivity along the UCFR.
- ❖ Characterize hydrologic changes longitudinally (upstream to downstream) over the UCFR with focus on Reach A.
- ❖ Improve knowledge of UCFR habitat, populations, and biological productivity.
- ❖ Improve information management and sharing among the UCFWG and other entities doing research, restoration and remediation in the UCFR basin.