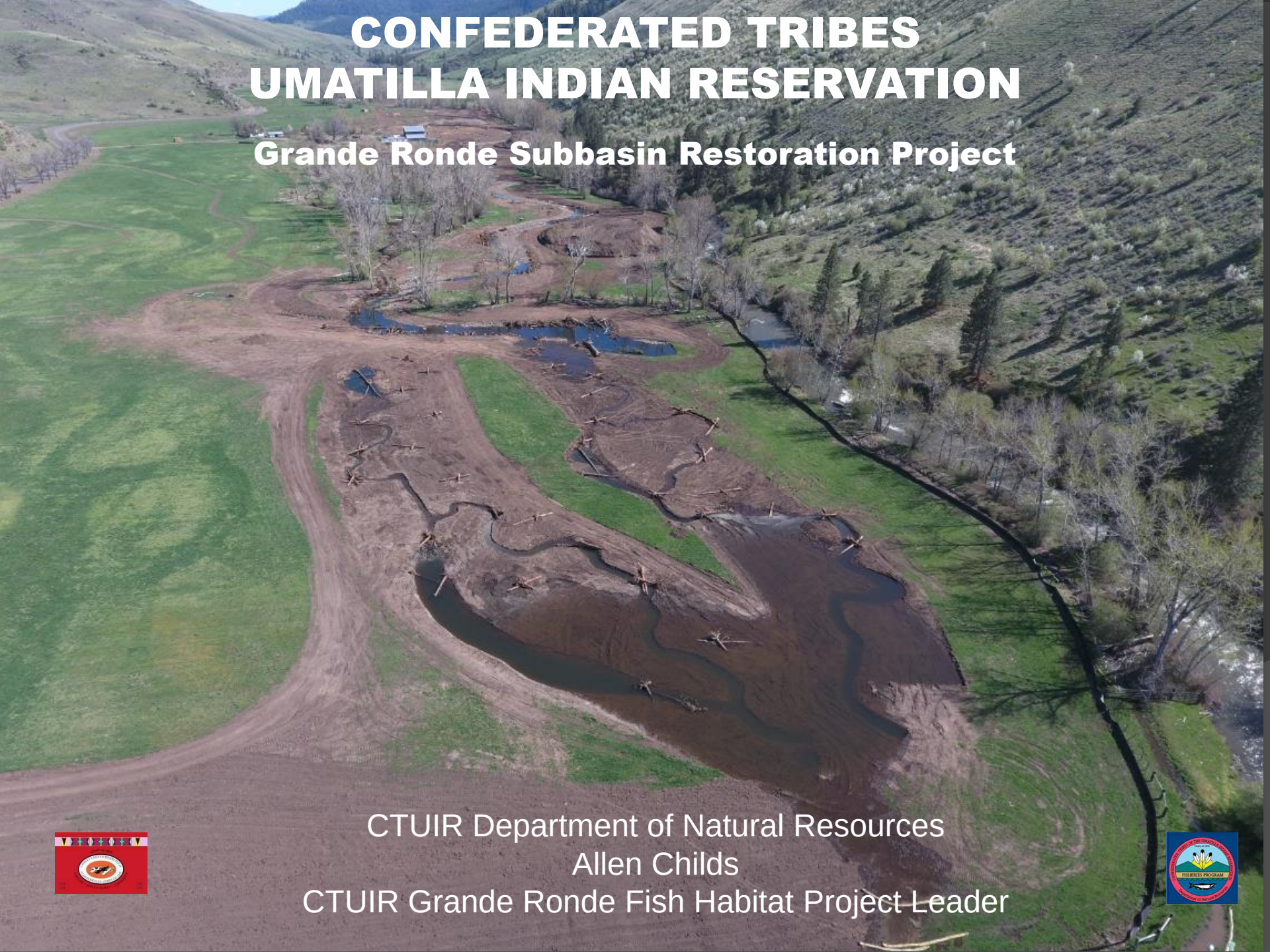


CONFEDERATED TRIBES
UMATILLA INDIAN RESERVATION

Grande Ronde Subbasin Restoration Project

CTUIR Department of Natural Resources
Allen Childs
CTUIR Grande Ronde Fish Habitat Project Leader

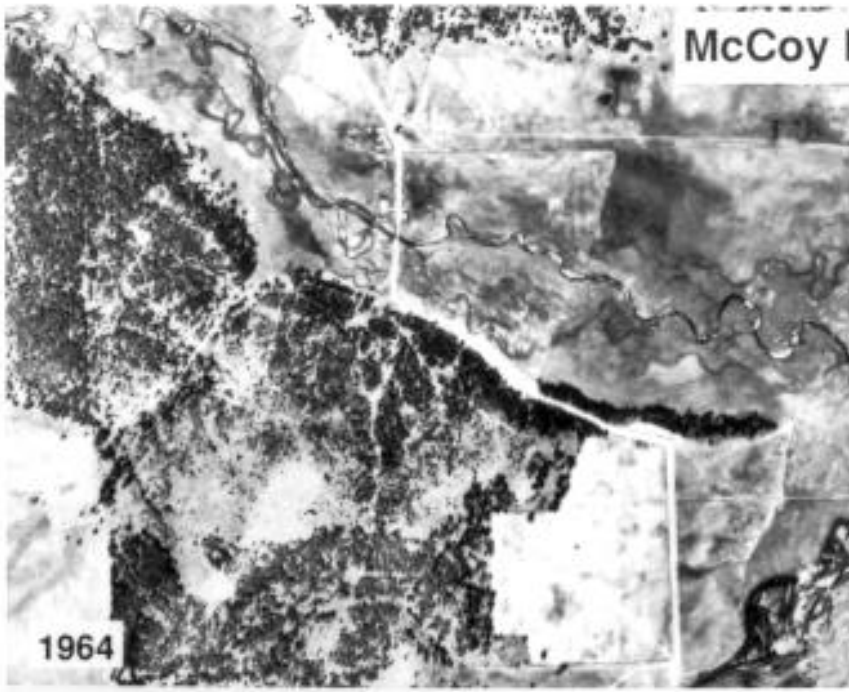
Basin History 1800's

- Early 1800's – Traders, trappers, missionaries begin inhabiting the basin.
- 1861 – Gold Rush, Livestock
- 1863 – Homestead Act, First Irrigation
- 1864 – Logging, Splash Dams and Sawmills
- 1868 – Construction of State Ditch (Original 6-ft bottom width)
- 1869 – Draining Tule Lake/State Ditch on Grande Ronde

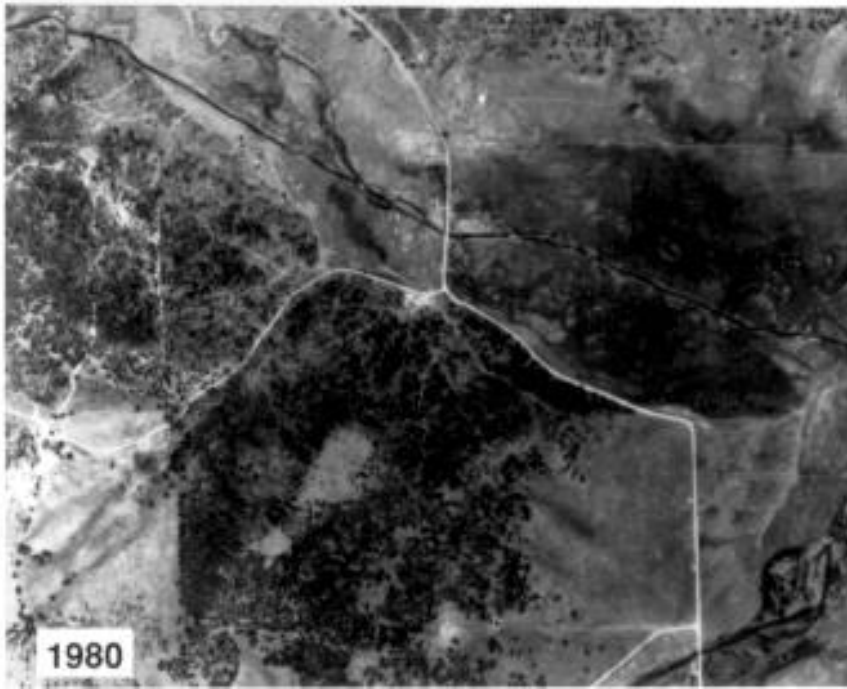
History Con't. Early 1900's

- 1925 – Flood irrigation of over 30,000 acres
- 1940 – 19 dams on Catherine Creek, Stream channelization begins in earnest.
- 1945 – Lower Snake River Project authorized (20,000 Chinook Salmon return to basin)
- 1950 – Construction of 54 miles of levees and channelization on the Grande Ronde and Catherine Creek
- 1957 – Estimated 12,200 Chinook Salmon returned to basin
- 1965 – Congress allows construction of flood control dams on Catherine Creek


1937

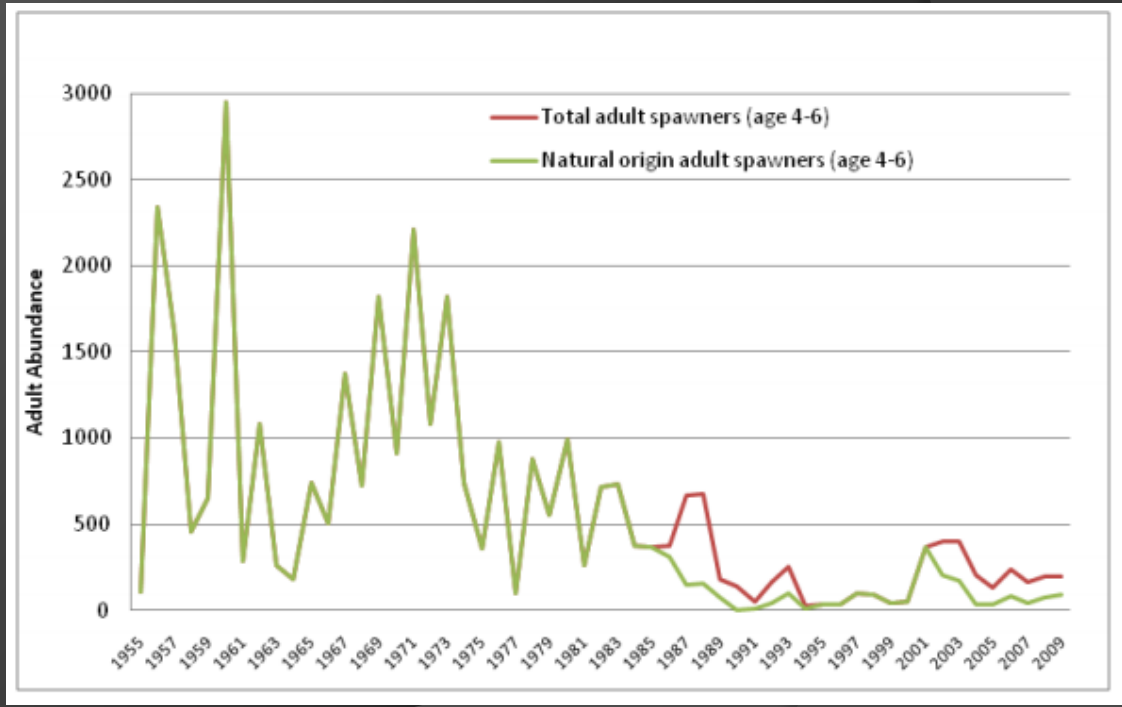

McCoy
1964


1970

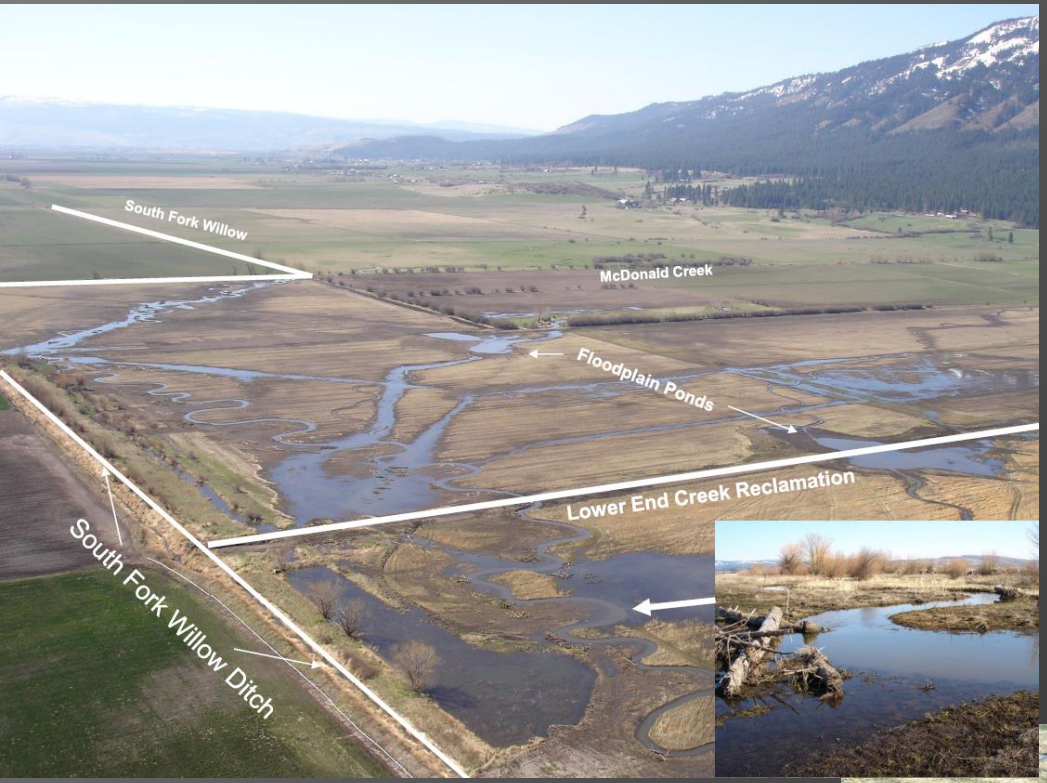

1980

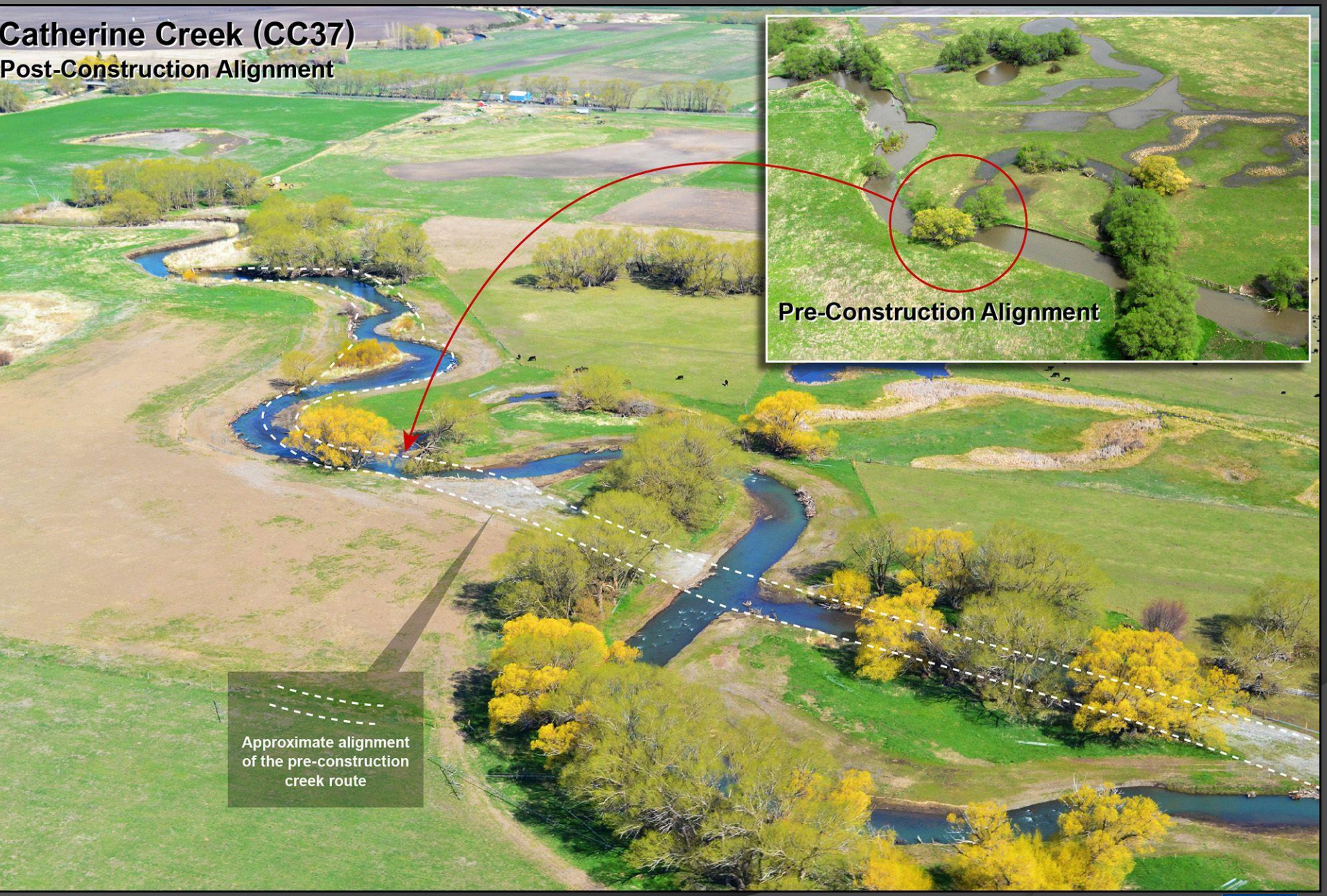
History Con't. Late 1900's

- 1970 – 8,400 Chinook Salmon returned to basin
- 1979-1984 – 474 to 1,080 Chinook returns
- 1986 – Grande Ronde coho salmon considered extinct
- 1990 – 67% decrease in pools/mile since 1941
- 1992 – Snake River fall Chinook, Snake River summer/spring Chinook, Snake River steelhead listed under the Endangered Species Act

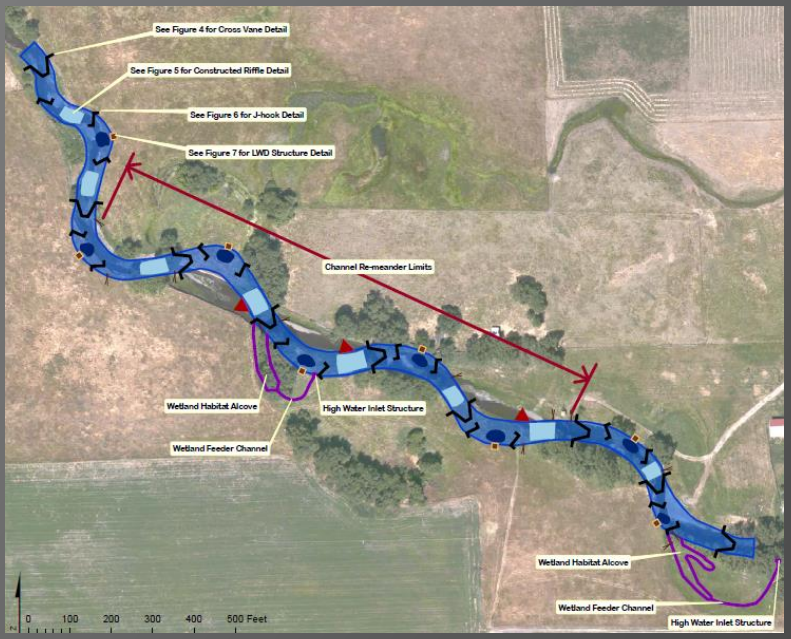


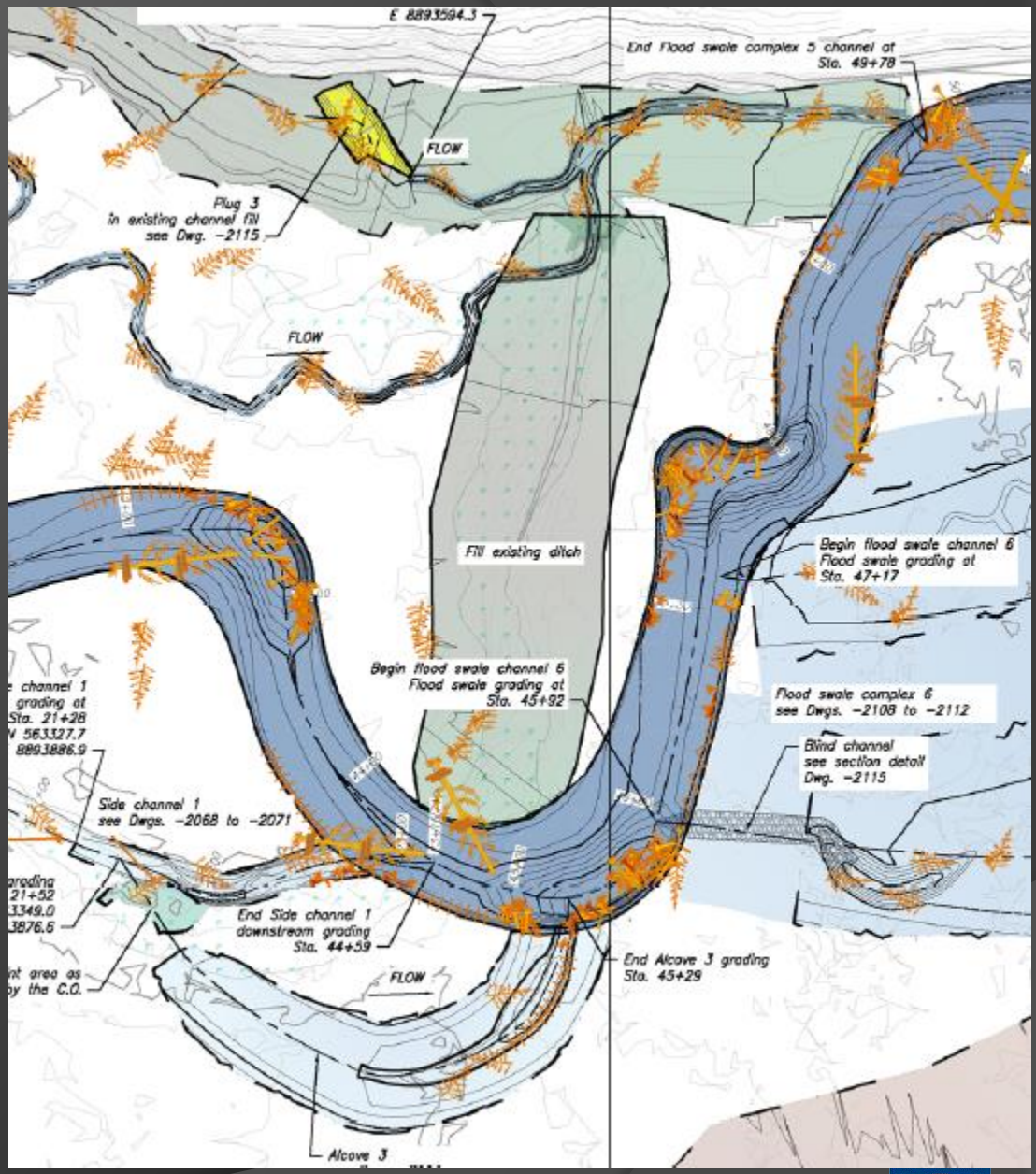

istoric
Beaver Complex &
Pond Manifold
Floodplain Ponds
McCoy Creek
Meadow Creek

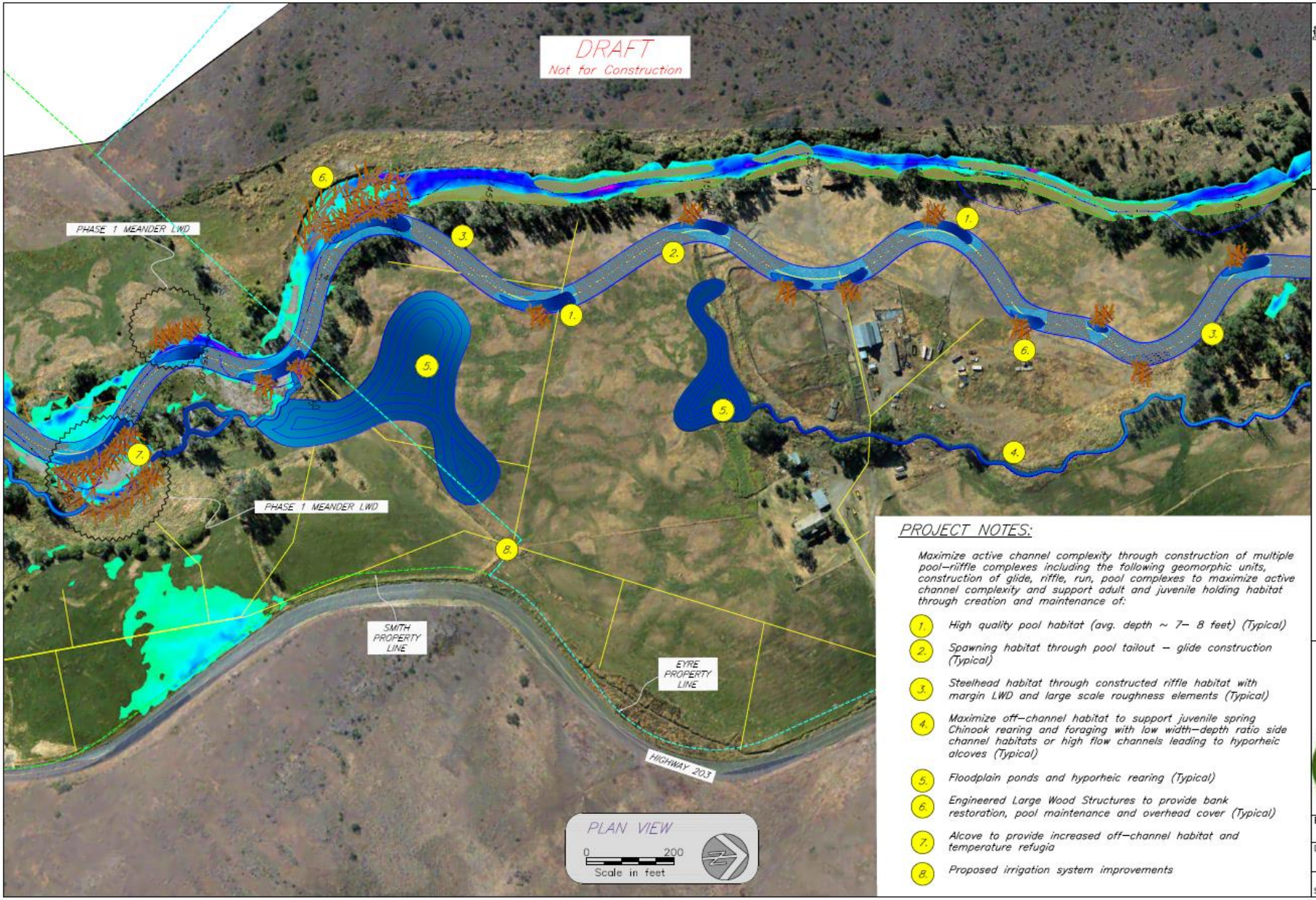

South Fork Willow
McDonald Creek
Floodplain Ponds
Lower End Creek Reclamation
South Fork Willow Ditch


Catherine Creek (CC37)
Post-Construction Alignment
Pre-Construction Alignment
Approximate alignment of the pre-construction creek route


FISHERIES PROGRAM


See Figure 4 for Cross Vane Detail
See Figure 5 for Constructed Riffle Detail
See Figure 6 for J-hook Detail
See Figure 7 for LWD Structure Detail
Channel Re-meander Limits
Wetland Habitat Alcove
High Water Inlet Structure
Wetland Feeder Channel
Wetland Habitat Alcove
Wetland Feeder Channel
High Water Inlet Structure
0 100 200 300 400 500 Feet


E 8893594.3
End Flood swale complex 5 channel at Sta. 49+78
FLOW
Plug 3 in existing channel (N see Dwg. -2115
FLOW
Fill existing ditch
Begin flood swale channel 6 Flood swale grading at Sta. 47+17
Begin flood swale channel 6 Flood swale grading at Sta. 45+92
Flood swale complex 6 see Dwgs. -2108 to -2112
Blind channel see section detail Dwg. -2115
Side channel 1 see Dwgs. -2068 to -2071
End Side channel 1 downstream grading Sta. 44+59
End Alcove 3 grading Sta. 45+29
FLOW
Alcove 3



PROJECT NOTES:

Maximize active channel complexity through construction of multiple pool–riffle complexes including the following geomorphic units, construction of glide, riffle, run, pool complexes to maximize active channel complexity and support adult and juvenile holding habitat through creation and maintenance of:

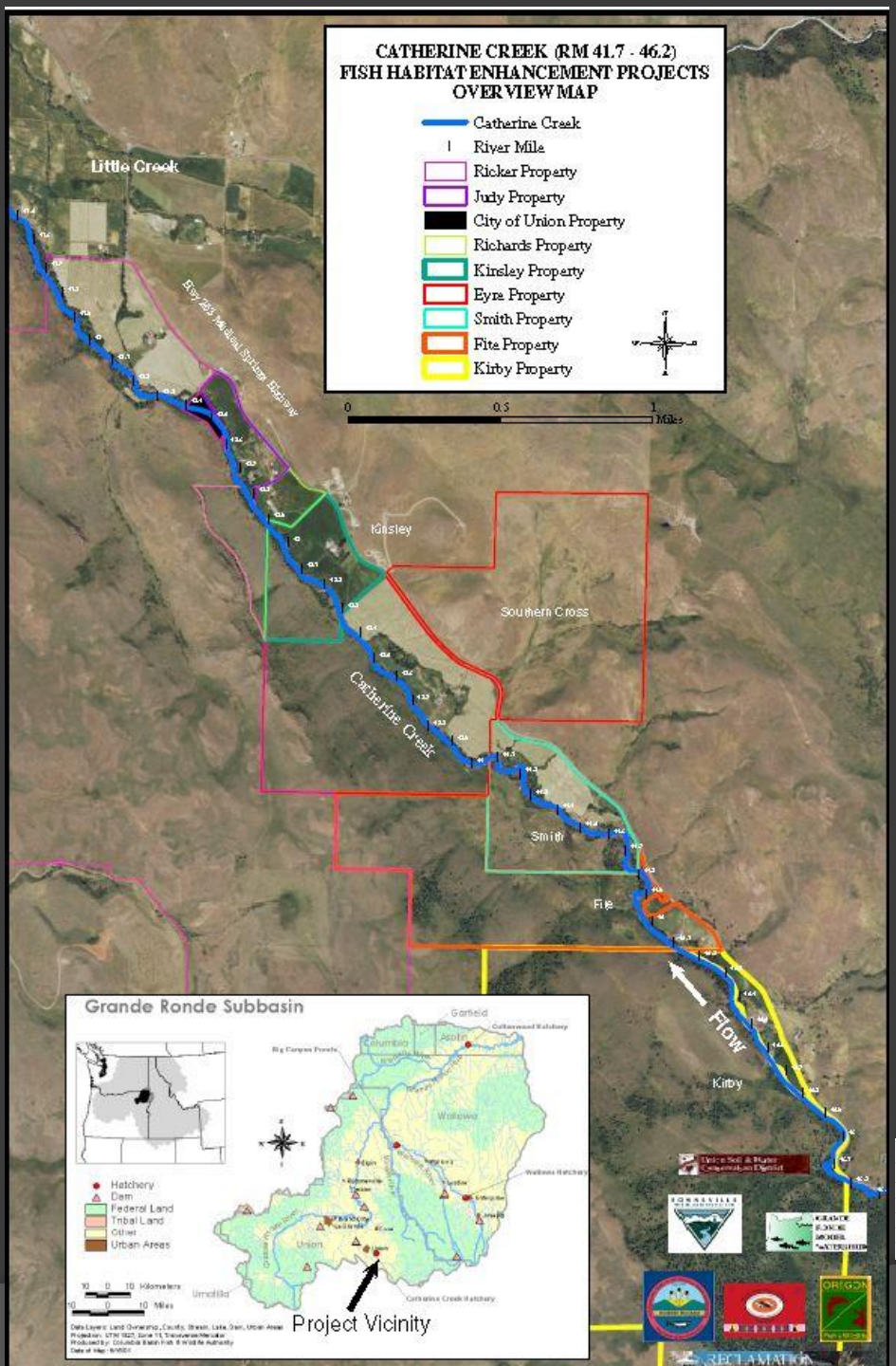
1. High quality pool habitat (avg. depth ~ 7– 8 feet) (Typical)
2. Spawning habitat through pool tailout – glide construction (Typical)
3. Steelhead habitat through constructed riffle habitat with margin LWD and large scale roughness elements (Typical)
4. Maximize off–channel habitat to support juvenile spring Chinook rearing and foraging with low width–depth ratio side channel habitats or high flow channels leading to hyporheic alcoves (Typical)
5. Floodplain ponds and hyporheic rearing (Typical)
6. Engineered Large Wood Structures to provide bank restoration, pool maintenance and overhead cover (Typical)
7. Alcove to provide increased off–channel habitat and temperature refugia
8. Proposed irrigation system improvements

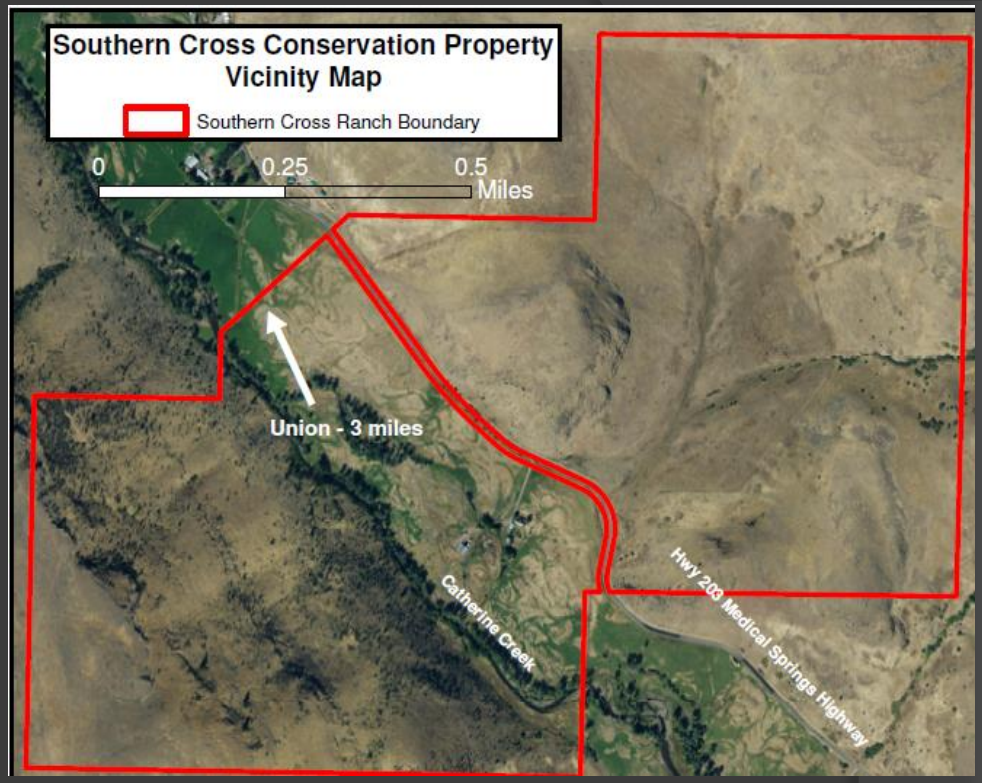
Date
Designed Lotengregory Technical Team Dec 2012
Drawn S.Welch Dec 2012
Checked
Approved
Title

SHEET 6 – STA: 90+00 – 27+50
CATHERINE CREEK CC–44 PROJECT REACH
UNION SOIL AND WATER CONSERVATION DISTRICT
UNION COUNTY, OREGON

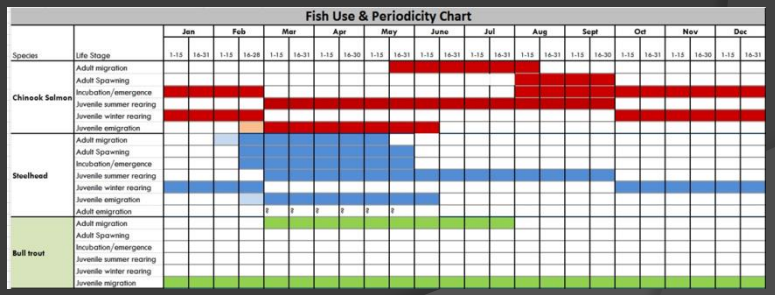
UNION SWCD

File Name
CC44.dwg
Drawing No.
6
Sheet 6 of 8





CC3B1 BSR



Fish Use & Life Stage Utilization		
Fish Utilization	**Score**	**Comments**
Adult Migration	L	No complete barriers, flow likely not affecting migration. (Moved holding comment into Holding/Spawning/Incubation/Emergence row, changed to L
Juvenile Outmigration	L	No complete barriers, spring outmigration not at risk in this BSR
Holding/Spawning / Incubation	M	Spawning occurring, but not the critical need due to density dependence needing to be addressed 1st. Limited holding habitat.
Summer Rearing	H	Critical summer rearing to help address density dependance
Winter Rearing	M	Beginning of Winter/Summer rearing overlap.

Limiting Factors

Streamflow (quantity)

Water quality

Fish passage

Channel & bed form

Channel & habitat complexity

Off-channel habitats

Project Goals

Streamflow conservation

Improved fish passage

Floodplain connectivity

Side channels/Alcoves

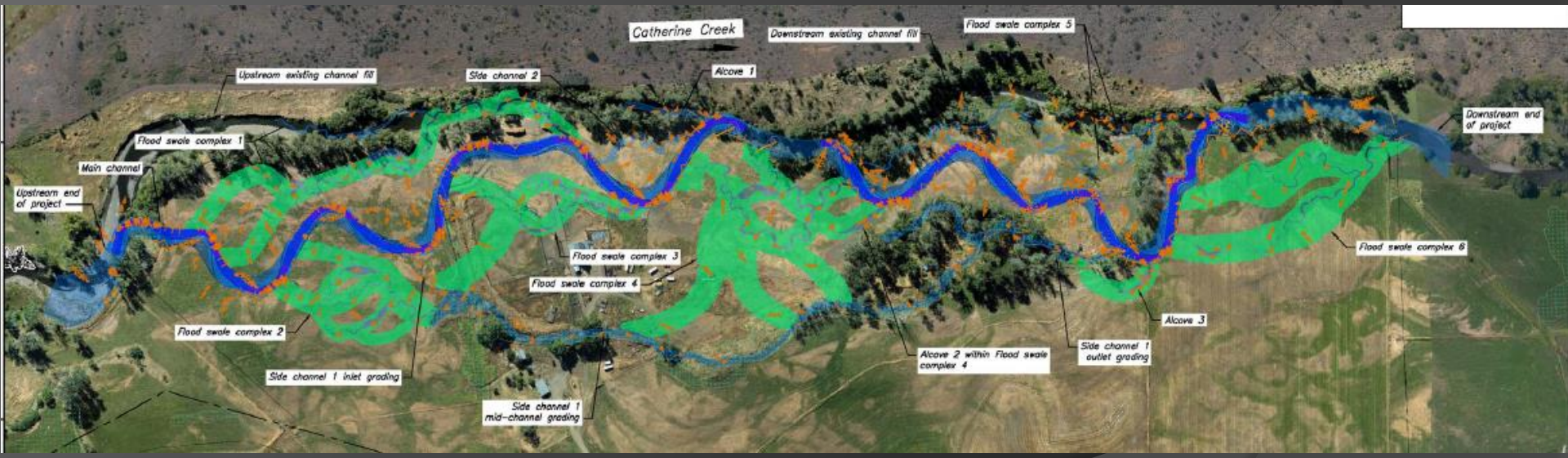
Channel morphology

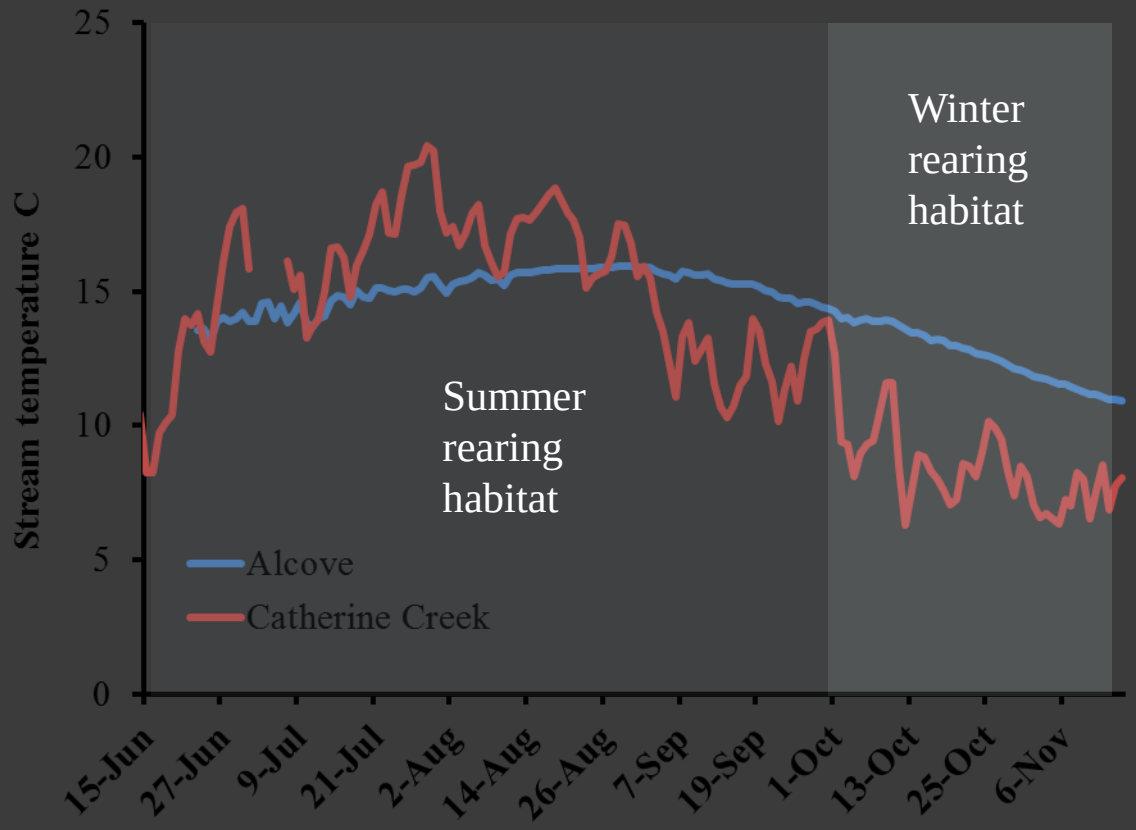
Habitat complexity

Riparian/wetland vegetation


Catherine Creek
Flow
Side channel 1
Phase II pipeline alignment
Phase II 6" farm delivery
4


Catherine Creek
Flow
Side channel 1
Phase II pipeline alignment
Phase II 6" farm delivery
4


Catherine Creek
Upstream existing channel fill
Side channel 2
Alcove 1
Downstream existing channel fill
Flood swale complex 5
Downstream end of project
Flood swale complex 1
Main channel
Upstream end of project
Flood swale complex 3
Flood swale complex 4
Flood swale complex 6
Flood swale complex 2
Alcove 3
Side channel 1 inlet grading
Alcove 2 within Flood swale complex 4
Side channel 1 outlet grading
Side channel 1 mid-channel grading



Side Channel & Alcove Habitat Provides:

Low velocity refuge during high flow periods (Important for recently emerged fingerlings)

Cold water refuge in Summer.

Warmer water in Winter.

“Buffers” extremes.

Catherine Creek, Rivermile 44
Southern Cross Fish Habitat Restoration Metrics

Permanent Protection of 1 mile mainstem Catherine Creek and 64 Acres of historic floodplain
4,200 lineal feet new main Catherine Creek channel
2,680 lineal feet new side channel
1,425 lineal feet of alcoves and spring channels
9,200 lineal feet of floodplain swale complexes
15 riffles in main channel
18 main channel large pools
142 main channel large wood structure components
570 lineal feet channel edge roughness
1,075 lineal feet streambank bio-engineering
400+ floodplain roughness features (large wood structures and whole trees)
14,289 containerized trees and shrubs
5,700 willow cuttings
2,200 sedge/rush plugs
9,000 lbs native seed
50,000 cubic yards channel and floodplain excavation
Installation of 40 foot bridge on perennial side channel

	Total Wetted Area		
Discharge (cfs)	Existing (acres)	Proposed (acres)	% Increase
18	3.8	4.0	4%
40	4.3	5.6	29%
60	4.6	6.1	34%
120	5.2	7.2	39%
280	5.9	9.9	69%
450	6.6	15.9	140%
565	8.6	20.8	143%

	Summer Chinook WUA (acres)		
Discharge (cfs)	Existing	Proposed	% Increase
18	0.05	0.72	1309%
40	0.06	0.81	1170%
60	0.07	0.79	1005%

	Winter Chinook & Steelhead WUA (acres)		
Discharge (cfs)	Existing	Proposed	% Increase
18	0.07	0.58	680%
40	0.06	0.74	1051%
60	0.06	0.80	1307%
120	0.04	0.72	1529%
280	0.04	0.48	1166%
450	0.03	0.51	1393%
565	0.05	0.59	1137%

	Summer Steelhead WUA (acres)		
Discharge (cfs)	Existing	Proposed	% Increase
18	0.07	0.44	570%
40	0.13	0.89	582%
60	0.16	1.12	590%

Project Goals

Streamflow conservation

Improved fish passage

Floodplain connectivity

Side channels

Channel morphology

Habitat complexity

Riparian/wetland vegetation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