

Henry's Fork Salinity Control Area
Monitoring & Evaluation Report
2018



Wildlife/wetland replacement assessments and replacements projects

Wetland Assessments- Prior to Irrigation System Installation

- Anderson Pivot & Gated Pipe- 59.3 irrigated acres assessed and 26.1 wetland acres found in July 2017. One center pivot and gated pipe will be installed on two fields for a total of 59.3 acres. The proposed pivot pasture consists of hay grasses, sagebrush, rabbitbrush, white-top, curly cup gumweed and bare soil on the northeastern side. Prairie dog colonies are present. Along the irrigation ditches and the southwestern end, there are approximately 18 acres that included seasonal wetland characteristics. Vegetation includes alfalfa, sweet clover, timothy and hay/meadow grasses, dock sorrel and some standing water along the southern ditch. There is a ravine with a wash in between the two fields that contains some cottonwood trees. The proposed gated pipe field has 8.1 acres of seasonal wetland characteristics. Vegetation includes timothy and meadow grasses, rushes, musk thistles, dock sorrel, watercress along the southern ditch and patches of moss covered soil. Standing water was also present in some patches. The area was surrounded by upland sagebrush habitat and within a quarter mile of the Henry's Fork River riparian zone.
- **70.47** total wetland habitat values prior to irrigation improvement.



Photo 1: Overview of the pivot field facing northwest, July 2017.



Photo 2: Northeast end of pivot field facing south showing dry conditions and bare soil, July 2017.



Photo 3: Southwest end of pivot field with meadow grasses and alfalfa, July 2017.



Photo 4: South end of gated pipe field with timothy grass, rushes, sedges, moss and standing water, July 2017.

Follow-up Assessments of Irrigation Projects

Follow-up wetland assessments occur when a conservation practice has been in place for at least a year and wetland characteristics of the assessment area appear to have changed from pre-practice conditions. If no significant changes have occurred, photos are taken but a wetland assessment will be planned for the following year, so that the impacts are fully realized. Follow-up assessments will also be postponed if normal conditions are not present.

- R. Slagowski Pivot was installed in November 2015. A site visit was completed July 2017. There appeared to be wetland characteristics still present on the 5 acres previously assessed. Since the conditions had not changed noticeably, photos were taken and the follow-up assessment was postponed for the following year.



Photo 5: R. Slagowski Pivot with alfalfa, hay grasses and sweet clover, July 2017.

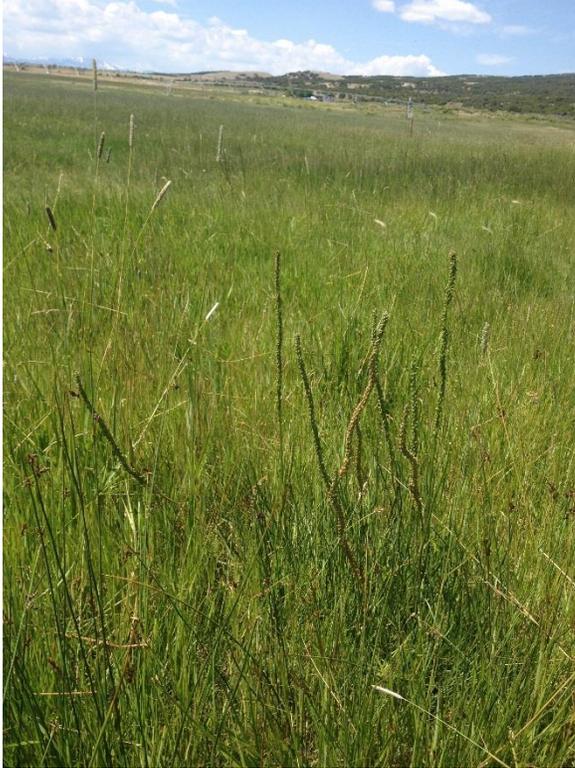


Photo 6: Common arrowgrass, rushes, sedges, meadow grasses and saturated soil still present on south end of the field, July 2017.

2017 Completed Habitat Replacement Projects

- Nelson Diversion Improvement- The Nelson Diversion Improvement Project was completed September 2017. The previous structure was a push-up diversion that was found to be a fish barrier for most of the year and required frequent maintenance by the landowner. The new concrete structure reduces maintenance requirements and allows for fish passage throughout the year, specifically for Colorado River cutthroat trout (CRC). This structure now promotes connectivity between genetically pure populations of CRC. An estimated 10 stream miles of habitat was opened for native fish passage thanks to this project.
- **24.9** Total habitat replacement values (Reference Replacement Value Calculator)



Photo 7: Nelson Push-up diversion seasonally blocking Beaver Creek, August 2016.



Photo 8: Improved Nelson diversion that allows permanent fish passage, October 2017.

- Beaver Creek Riparian Fencing- Beaver Creek is a tributary to the Henry's Fork River. Riparian fence was installed along 1 stream mile of Beaver Creek in December 2017. Approximately 26 acres of riparian zone was fenced from cattle grazing with this project. This section of Beaver Creek was straight, widened and had incised banks, which provided higher water temperatures in the summer and little in-stream structures for trout. The bank erosion also contributes to a higher sediment load in the creek. These improvements will help restore native trout to the lower sections of Beaver Creek. It will also help other riparian species, such as the yellow-billed cuckoo, mule deer, moose and waterfowl. Three-strand, high-tensile electric fence with water gaps were installed to exclude cattle from the creek and promote natural re-vegetation along the riparian corridor. This is an ongoing project and more pastures are scheduled to be fenced in the next year as funds become available.

139.0 Total wetland habitat values (59% of possible score) (MT Wetland Assessment Tool)



Photo 9: Eroding section of Beaver Creek prior to riparian fencing, July 2013.



Photo 10: Three-strand high-tensile electric fence along the riparian corridor of the Molly Bullock pasture on Beaver Creek, February 2018.

- **Blue Bell Diversion Improvement-** The Blue Bell diversion was one of the largest push-up dams on the Henry's Fork River. The landowner had to restructure the dam several times during the year, usually in the spring and early-summer. Restructuring involved operating large equipment in the river, often during spring run-off and critical native fish spawning periods. If river flows were low, the Blue Bell dam was a seasonal fish barrier. The push-up diversion was replaced with a low-maintenance and fish-passable rock vane structure. A second rock vane structure was placed below the first to help stabilize the river channel bed and prevent erosion further downstream. Rip-rap was placed around the diversion to stop the current head-cuts from further bank erosion. An open-topped, steel head-gate was placed a few yards upstream of the existing point of diversion and a new canal was constructed to the confluence with Burnt Fork Creek. One head-gate and a rock vane structure was placed at the confluence of Burnt Fork and the Blue Bell ditch to help producers better manage their ditch operations. The large gravel berm that constricted the river was removed, which allows the river to access its flood plain. This project seasonally reconnected an estimated 35 river miles. Improving this diversion allows native fish to access habitat needed during different life history stages and promotes connectivity between populations, thereby improving genetic integrity and the likelihood of persistence. The project was completed January 2018.

87.3 Total habitat replacement values (Reference Replacement Value Calculator)



Photo 11: Blue Bell push-up dam diversion, July 2013.



Photo 12: Improved Blue Bell rock vane diversion structure, November 2017.

Planned Habitat Replacement Projects

- Beaver Creek Riparian Fencing- The Lonetree Ranch is interested in fencing more riparian acres in different pastures. Site visits in 2018 will determine the next location and number of acres that will be fenced. Estimated replacement points are unknown at this time.
- Henry's Fork diversion improvements- The success of the Blue Bell diversion project has created a significant amount of interest in landowners along the mainstem of the Henry's Fork River and Burnt Fork Creek in improving their diversions. Five landowners have requested site visits this summer to determine if their diversions are seasonal fish barriers. Estimated replacement points are unknown at this time.

Considerations and Conclusions

There was one irrigation improvement project that required a wetland assessment for 59.3 acres in 2017 in the Henry's Fork Salinity Control Program area. The wetland assessment was performed during the irrigation season to best identify all wetland characteristics possible. This project had mostly dryland with mixed hay grasses on the field proposed for a pivot. The wetland values found were located along ditches and along the southwestern section of the pivot field and throughout the entire area of the gated pipe field. There was upland vegetation present along the higher, outer edges of the assessment area. White-top was present in the upland areas and yellow sweet clover and musk thistle were found in the wetter areas.

Of the 26.1 wetland acres assessed, moist soil characteristics were found, along with sedges, rushes and other hydrophytic plants. The proposed gated pipe field had some standing water, mossy soils and dense meadow grasses. The wetlands found appear to be seasonal irrigation induced wetlands. They have little structural diversity, but are near a cottonwood gallery and within 0.25 mile of the Henry's Fork River so they may provide secondary habitat for some wildlife in the area. Some of the acres had standing water and may provide some groundwater recharge potential. The characteristics found in these wetlands are common in irrigated lands found in the Henry's Fork drainage, so they received low uniqueness rankings. No recreational or education potential was found. The table below summarizes the habitat values present for all Salinity Control Program projects in the Henry's Fork area, based on the Montana Wetland Assessment Method.

Name	Irrigated acres Assessed	Wetland Acres Assessed	Total Habitat Values
Pallesen Pod-line	2	0	0
Thomas Pod-line	27.6	1.3	3.77
Crowther Pivot	40	2.95	7.67

S. Slagowski Pivot	25.1	1.02	1.84
B. Slagowski Pivot	48.4	5.0	15.00
Beck Pivot	100	83.5	292.25
Anderson Pivot and Gated Pipe	59.3	26.1	70.47
Total	302.4	119.87	391

Table 1: Henry’s Fork Salinity Control Program projects and habitat values assessed.

There have been five habitat replacement projects completed: Peoples Canal Fish Barrier, the Beaver Creek diversion improvement (summarized in previous reports), the Nelson and Blue Bell diversion improvement projects and riparian fencing on the Molly Bullock pasture on Beaver Creek. There are several other projects that will be investigated this year.

Name	Habitat Value	Replacement Value Totals
Peoples Canal Fish Barrier	100 stream miles protected	178.2 completed
Beaver Creek Diversion Improvement	6 stream miles seasonally connected	14.9 completed
Blue Bell Diversion Improvement	35 stream miles seasonally reconnected	87.3 completed
Nelson Diversion Improvement	10 stream miles seasonally reconnected	24.9 completed
		218 Total Completed
Beaver Creek Riparian Fencing	26 riparian acres excluded from grazing	139 Values present, estimated will improve by 50-100 pts

Table 2: Henry’s Fork Salinity Control Program habitat replacement projects and values.

References

Berglund, J. and McEldowney, R. 2008 MDT Wetland Assessment Method. Prepared for Montana Department of Transportation. Post, Buckley, Schuh and Jernigan. Helena, Montana.

Dorn, R. Manual of Vascular Plants of Wyoming. Cheyenne, Wyoming: Mountain West Publishing, 2001. Print.

Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014.
The National Wetland Plant List: 2014 Update of Wetland Ratings.
Phytoneuron 2014-41: 1-42.

U.S. Army Corps of Engineers 2014. National Wetland Plant List, version 3.2.
http://wetland_plants.usace.army.mil

	Location of Practice	Similarity to lost values	Species of Concern	
Wetland restoration		5		
Wetland enhancement		5		
Wetland creation		5		
Riparian grazing		5		
Instream habitat		5		
perpetual easement- wetland		5	4	3
perpetual easement- upland		5	1	5
Refuge Expansion		1	1	5
Upland Habitat Improvement		5	1	5
Instream Flow		5	1	3
Fish Barrier Construction		5	1	3
Fish Screen Construction		5	1	3
Fish Friendly Diversion		5	1	3
Ranking Criteria	Henry's Fork Salinity	In-kind = 4	T&E = 5	
	Project Area = 5; 3=	Out-of-Kind = 1	State Species = 3	
	Green River		Game = 2	
	Watershed below		Other = 1	
	Fontanelle; Green			
	River above Fontanelle			
	= 1			

(Location + Similarity + Species)Misc. Multiplier*Size*Ranking*MDOT = Replacement

Misc. Multiplier	Project Size	MDOT Points	Professional Ranking	MDOT Multiplier
		35	1.375	
		35	1.25	
		60	1	
		61	0.875	0.75
		140	0.625	
1	0		1	0.1
0.7	0		0.125	0.1
1	0		0.625	0.1
0.5	0		0.25	0.1
	0		0.875	0.1
1	0		0.375	0.1
1	0		0.5	0.1
1	0		0.75	0.1

Habitat Quality for
Easements, Refuge
Exp., Upland
Improvement
Unique, diverse =1
Important = 0.7
Common = 0.5

Acres **or**
1000's of ft of
stream impacted
upstream of barrier,
screen, diversion
or 10's of AC/FT of
water

Fish Barrier or Fish
Friendly Diversion
Full = 1 Partial = 0.7

Fish Screen: Many
fish lost in ditch =1
Moderate fish loss
=0.7 Low fish
loss =0.3

Replacement Points	<u>pts/unit</u>
48.125	2.4 pts/ac
43.75	2.2 pts/ac
60	3 pts/ac
40.03125	2 pts/ac
87.5	5.25 pts/ac
0	2.4 pts/ac
0	0.10 pts/ac
0	0.4 pts/ac
0	0.14 pts/ac
0	per year?
0	1.8 pts/mi
0	2.4 pts/mi
0	3.6 pts/mi