

John Day River Fish Habitat Enhancement

1989
ANNUAL PROGRESS REPORT

by

Jeff Neal, Project Biologist

William Noll, Northeast Region Program Leader

Oregon Department of Fish and Wildlife

P.O. Box 9

John Day, Oregon 97845

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ABSTRACT

This project, initiated July 1, 1984, under Bonneville Power Administration (BPA) contract number DE A179-84 BP17460 provides initial landowner contacts, agreement development, project design, budgeting, and implementation for an anadromous fish habitat improvement program on privately owned lands within the John Day Basin. The purpose of the project is to provide offsite mitigation for spring chinook and summer steelhead adult and juvenile losses at hydroelectric dams on the Columbia River. Activities under the first phase of the contract period (January 1, 1989 through June 30, 1989, state FY 89) included landowner contacts and agreement development, personnel training, construction materials purchasing, physical habitat inventory, planning and design, and construction contract development. Activities in the second phase (July 1, 1989 through December 31, 1989, State FY 90) included layout of contract work and contract implementation, physical habitat inventory and photopoints, construction of livestock watering devices and riparian fence, budget development, annual report, and landowner contacts for 1990 work.

During 1989, one lease was signed, modifications were made to existing habitat structures on several previously leased properties, and 1.2 miles of stream were added to the program. This required the construction of 2.5 miles of riparian fence and 2 new livestock watergaps and the placing of 2,415 cubic yards of rock structures and 213 fish habitat boulders.

Repairs and modifications of 13.9 miles of fence, 12 livestock watergaps, 3 spring developments, and 5 large checkdams were made. Additionally 967 cubic yards of rock were placed and 15 boulders were relocated to existing properties.

INTRODUCTION

The purpose of the John Day Fish Habitat Enhancement Program is to enhance the production of the indigenous wild stocks of spring chinook and summer steelhead within the basin through habitat enhancement and access improvement. The John Day River system supports the largest remaining totally wild runs of spring chinook salmon and summer steelhead in northeast Oregon. It is the overall goal of this program to preserve and enhance the unique genetic component of these stocks thereby reserving the option for future rebuilding of fish runs in other Columbia River tributaries and for optimally utilizing improved fish habitat in the John Day basin.

DESCRIPTION OF PROJECT AREA

(see figure 1)

The John Day River drains 8,010 square miles of land in east central Oregon and is the third largest drainage in the state (Figure 1). The basin includes a major part of Gilliam, Grant, and Wheeler counties and portions of Crook, Harney, Jefferson, Morrow, Sherman, Umatilla, Union, and Wasco counties.

The mainstem John Day River flows 284 miles from its source in the Strawberry Mountains to where it enters the Columbia River just above the John Day Dam. The largest tributary, the North Fork, enters the John Day at Kimberly (RM 184) and extends 112 miles to its headwaters in the Elkhorn Mountains near the town of Granite. The Middle Fork John Day River originates just south of the headwaters of the North Fork and flows roughly parallel to it for 75 miles until they merge at RM 31 of the North Fork. The South Fork originates from Snow Mountain near the town of Burns and drains the south side of the Aldrich Mountains. It flows into the mainstem near the town of Dayville at RM 3.12.

HISTORICAL SUMMARY

Although several areas of Oregon and the Pacific Northwest were claimed by settlers and had begun agricultural development by the year 1862, the John Day Basin was still considered a wilderness, largely untouched by man.

Apparently the basin was once rich with riparian vegetation and beaver. The Peter Skene Ogden party, sent by the Hudson's Bay Company, frequently commented on the thick, lush vegetation they found while trapping on the John Day River. They caught 985 beaver between the months of January and July, 1826 (Binns 1967). Some of the basin's earliest settlers reported the river bottom as being smothered with cottonwoods and "thornbushes" along the streambanks and across the meadow bottoms (Oliver 1962).

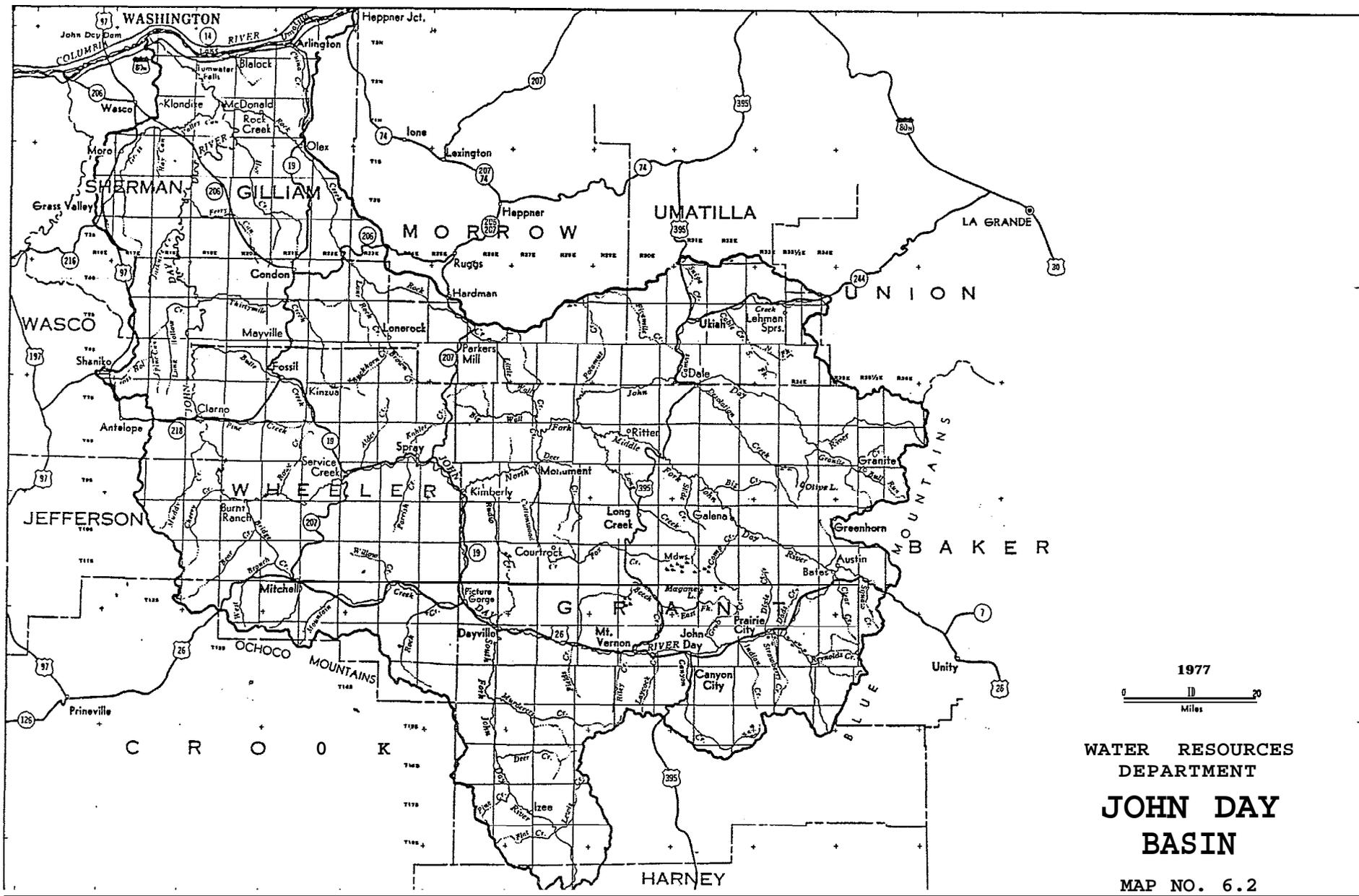


Figure 1

Evidence of greater summer flows exists as described by William C. Aldred, the man who discovered gold in Canyon Creek. He is quoted as saying that in mid June of 1862 he was traveling with a group of men from Canyon Creek to Baker. In the upper end of the John Day Valley, above the town of Prairie City, the leader of 'his group almost drowned while trying to ford the river. None of the men wanted to attempt crossing because it was so deep and swift. After searching upstream and down for a suitable place to cross, they finally fell some cottonwoods across the channel and completed their crossing (Oliver 1962).

The Canyon Creek gold strike of 1862 began a series of changes within the basin. Almost immediately 5,000 new people began sluicing gravels, homesteading the creek bottoms, and bringing in livestock to feed and finance their newfound homes. Stream bottoms were cleared and planted to hayground or grain, and stream courses were channelized and diverted for irrigation.

By the 1930's the drainage had gone through a major vegetative change. The "waving seas of grass" in the foothills were replaced with bitterbrush, sage, cheatgrass and juniper; and the cottonwood/thornbrush (hawthorn) stream bottoms were replaced with cultivated hay and grainfields.

Extensive large-scale gold dredging then occurred in the 1940's and 1950s. Six miles of the mainstem and 4 1/2 miles of the Middle Fork were overturned. The North Fork and its major tributary, Granite Creek, were dredged for a total of 28 1/2 miles during this period. The dredges operated during the summer and fall, silting the water for months at a time. They overturned spawning beds, salmon eggs and all; and totally altered stream channels and the surrounding vegetation. Many of these areas have never recovered.

Fish populations were also apparently greater around the turn of the century. Mr. Irving B. Hazeltine, who later became the Oregon Fish Commissions District Game Warden, reported counting 82 "silver salmon" going over a riffle in less than an hour on the mainstem near the town of John Day one September afternoon around 1905. He went on to say that a dam constructed in the early 1900's, across the lower river (RM 177) near the town of Spray, killed this run of fall migrating silvers. He says this dam was constructed with a useless fish ladder and received heavy poaching losses. The steelhead would begin going over the dam in March and the chinook in early June, but all summer or fall migrations were blocked due to lower water and poaching. Fortunately this dam was washed out by 1934 and was never rebuilt. Many more smaller irrigation dams on the mainstem and tributaries have been erected during the summer and fall months since this time and have severely restricted late summer adult migrations and even juvenile seasonal migrations. (Hazeltine 3.954).

These major habitat alterations have left the John Day River in its present state. Steelhead redd counts average 7.1 redds per mile with a spawner escapement of 34,000 adults. Spring chinook salmon redd counts average 10.8 redds per mile with a spawner escapement of 3000 adults.

More passage constrictions occur in the lower Columbia River. The John Day, The Dalles, and Bonneville dams all affect both downstream and upstream migrations. Recent improvements in fish passage technology have reduced these impacts however.

Some improvements to fish production potentials have occurred. These include screening and bypass facilities on all irrigation withdrawals, some livestock control and fish habitat enhancement and the removal of some fish migration barriers. Much remains to be done, however, to return the John Day to an ideal level of production, approaching its turn of the century condition. This is the challenge of our program.

Funding for this endeavor is provided by the Bonneville Power Administration under contract number DE A 3.79-84 BP1.7460. This funding provides for private land leasing, stream habitat inventory, planning and design work, contract development, budgeting, instream habitat placement, vegetation enhancement, and post construction review and maintenance. These activities are for anadromous fish habitat improvement on private lands within the John Day Basin. This program coincides with other BPA habitat programs on BLM and Forest Service lands within the basin.

Specific areas that were included in the project during FY 1989 are: The Mainstem John Day River above the town of John Day (RM 250 to 252.7: RM 255 to RN 256, RM 265 1 and Fox Creek (RM 26.0 to RM 36.0).

METHODS AND MATERIALS

All work is completed with the assistance of the Grant Soil and Water Conservation District (GSWCD) and the Soil Conservation Service (SCS). These duties include landowner contacts and 15 year lease agreements, stream inventory, planning and designing habitat treatments, procuring equipment and materials, hiring seasonal personnel, budgeting, and contract development and administration.

Baseline physical stream measurements are taken on prospective properties and compared to post treatment conditions. Stream width and depth are measured. Cover area, bank vegetation, and pool/riffle ratio are quantified for all reaches. "Cover" includes any submerged or overhanging material in the stream that provides holding and resting areas for rearing juvenile salmonids.

Stream reaches planned for work in FY 89 were surveyed to identify areas of poor instream habitat and riparian cover, and subsequently determine quantities and types of instream structures and riparian fencing. Engineering support personnel from GSWCD make measurements to determine bank stabilization needs and locations for jetties, boulder strings, riprap, and check dams.

Jetties, rock riprap, and juniper riprap are used to stabilize actively eroding banks and reduce stream channel erosion, as well as provide more quality habitat for rearing juvenile salmonids. Boulders are placed instream to provide more pool area and winter cover for rearing juveniles. Check dams are constructed to raise the water tables and to promote riparian vegetation growth. They also provide better pools and riffles for rearing juveniles.

Fencing is constructed to exclude cattle and allow full recovery of the riparian area (see Appendix A for photographs).

Spring developments are constructed to mitigate for lost livestock watering opportunities and to achieve better animal distribution and forage use.

Livestock crossings are constructed to allow stock movement between adjoining pastures and also provide access to water..

Fish migration barriers are removed or modified to allow year around access to more areas of the basin for adult and juvenile salmonids.

Riparian grass seed mix is planted by GSWCD personnel along the streambank or on areas disturbed by heavy equipment and construction activities. This mix along with the application rate is determined by SCS personnel. The mix includes hard fescue (Festuca ovina duriuscula) and pubescent wheatgrass (Agropyron trichophorum), both sod-forming species that develop a good root structure; ladak alfalfa (Medicago falcata ladak), white dutch clover (Trifolium repens), and sweat clover (~~Medililotus~~ officinalis), nitrogen-fixing species that provide rapid establishment of good cover and high quality wildlife forage; and tall wheatgrass (Anropyron elongattm), which produces large amounts of foliage and cover for surface stabilization, good nesting cover for birds, and fawning cover for deer.

RESULTS AND DISCUSSIONS

Field Activities

Prewrite

Persuit of signed leases along with intense project design and construction permit application occurred with two Middle Fork and two Mainstem landowners through the first 4 months of the reporting period. Only one of these landowners ended up signing a lease so this was the only area in which implementation could occur. After exhausting all of our time and resources on the other landowners there was no time remaining to persue leases in alternate areas before budget deadlines ran out.

A lease was signed on the Bill McNeil property allowing us to work on 1.1 miles of the mainstem John Day River. Preparations for this construction occurred sumultaneously with the Middle Fork preparations.

Construction materials were purchased including enough for 3 miles of fence, culverts for equipment access, and wire panels for watergaps.

A walk-through habitat inventory was performed on 20 miles of the Middle Fork John Day River during the summer, encompassing all private lands. Survey results showed a lack of riparian vegetation and eroding banks as being the principal limiting factors present here. Inventory results are shown in Appendix B.

Landowner contacts and lease negotiations for the 1990 construction season began in September, honoring a BPA program directive to try and have all of our leases for 1990 signed by Dec. 1, 1989. This effort resulted in 3 signed leases covering 6 miles of stream and will allow us to plan our 1990 implementation much more thoroughly. Three other landowners were closely negotiated with during this time but chose not to sign a lease before the lease signing deadline.

Implementation

Implementation of the McNeil instream rock contract occurred during the first half of August and lasted 10 days. Implementation of the McNeil fence construction contract began in September and continued into December.

These implementation activities- are summarized in Table 1.

Maintenance and Monitoring

All project fences, rock structures and livestock watering devices were surveyed to assess repair and modification needs. When these needs were quantified several small contracts were written to correct them. They included a fence repair contract, three instream structure

repair contracts, a spring development repair contract and a watergap modification contract. Implementation of these repair contracts began in the middle of August and continued into December.

A contract was implemented for major repairs on 12.4 miles of fence and the rebuilding of 1.5 miles of badly damaged fence. This allowed the repair of water debris damage, fallen tree removal, the replacement **of** worn out gates and other modifications that could not be accomplished, in a timely manner, by project personnel.

A Mainstem rock structure repair contract was implemented to move some ineffective boulders, place some extra jetties and repair a rip-rap blanket.

Repairs were done on 12 livestock watering devices and 3 spring developments on the Johns Ranch in Fox Valley. These repairs were undertaken to insure the availability of livestock water during low water years and to incorporate better functioning designs into some old watering devices in Fox Creek.

All 1989 repair activities are summarized in Table 1.

Monitoring activities included the continuation of our photopoint series, taking transect measurements, and the continuation of 3 steelhead redd surveys.

Photopoint monitoring included taking, developing and cataloging 127 pictures of different project sites throughout the basin. These photos were taken at permanently marked locations in the spring and again in the fall and required 3 man-months to complete. They are used to document riparian recovery, and to help others visualize what our improvements will look like on their property. Some of them have been included in Appendix A showing recovery in different areas.

Transect monitoring included establishing 10 sites on the McNeil property encompassing a very complex series of jetties. Measurements were taken of the channel before and after construction and will be taken again in 2 years to document further changes. Three transect series established on other properties in years past were not measured this year. They will be done again next year.

An attempt was made to conduct steelhead spawning ground surveys this year. High flows, however, had washed away most redds shortly after they were made and we were not able to make an accurate count. This count required 1/2 man-months. Data from the previous 3 years of surveys is presented in Table 2.

Table 2. Work completed, by landowner, for the John Day Basin Private Lands Habitat Improvement Project in 1989.

| Stream Landowner | - - | Mainstem McNeil | Mainstem Dow | Repair Carter | Emmel | Fox Creek Repair Johns McGirr | Totals | |
|--------------------------|--------|--------------------|-----------------|------------------|-------|----------------------------------|---------|----|
| Stream length | | 1.1 | | | | | 1.1 ml | |
| Fence construction | | 2.5 | | | | | 2.5 mi | |
| Fence repair | | | | | | | 12.4 mi | |
| Fence rebuild | | | 1.5 | | 85 ft | | 1.5 mi | |
| Boulders | | 213 | 10 | 5 | | | 228 | |
| Jetties | | 32 | 1 | 5 | 1 | | 39 | |
| Rock Riprap (ft) | | 175 | 70 | | 60 | | 305 ft | |
| Watergap construction | | 2 | | | | | 2 | |
| Spring dev. repair | | | | | | 3 | 3 | |
| Watergap modification | | | | | | 12 | 2 | 14 |
| Checkdam repair | | | | | | | 5 | 5 |

Table 2. Three year Summary of Steelhead Redd counts within John Day Project Areas.

| Stream | Miles Surveyed | Project Type | Redds Counted | | |
|----------------|----------------|--|---------------------------|----------------------------|---------------------------|
| | | | May 1986 | May 1987 | May 1988 |
| Fox Creek | 3 mi , | Habitat Improvement | 1 | 6 | 21 |
| Deer Creek | 2 mi | 1986 Passage Barrier Removal and Habitat Improvement | <u>0 above</u> 5 below | <u>3 above</u> 2 below | <u>5 above</u> 3 below |
| Fivemile Creek | 2.5 mi | August 1987 Passage Barrier Removal | <u>Not counted</u> | <u>0 above</u> 14 below | <u>4 above</u> 3 below |

Adminstrative

Monthly progress reports and the 1988 annual report for this habitat improvement project were submitted to BPA during 1989.

Program personnel gave input into the John Day sub-basin Plan and attended a smoothwire fence construction field trip.

The program hired a temporary technician from June to September 1989 to perform physical habitat inventories.

Preparation of the 1990\91 work statement and budget began in November and continued through the end of the reporting period, requiring considerable field time and preparation to quantify all the necessary parameters.

Interagency Coordination/Education

Two months (Apr.& May) were again spent working with the GSWCD, SCS, and BPA trying to secure cooperative agreements and funding for program personnel in 1989.

Consultation and review was provided to personnel from the Malheur National Forest on instream construction projects on the Middle Fork John Day River. Similar assistance was provided to personnel of the Umatilla National Forest regarding a coordinated implementation of the Camas Creek system.

Monthly Grant Soil and Water Conservation District meetings were attended to participate in local issues and keep board members informed of the progress of the BPA habitat project.

A tour of the John Day project was conducted in June for BPA. Information was presented at the tour on types and benefits of fencing and instream structures implemented on private lands in the John Day basin.

Several meetings, conferences and seminars were attended by members of the project staff for consultation with professional associates and training in new construction techniques.

SUMMARY AND CONCLUSIONS

A total of 1.1 miles of stream were treated in 1989; our smallest amount ever. The success of the program cannot be judged, however on this parameter alone. Our intent at the beginning of the year was to treat 3 miles of the Mainstem, 5 miles of the Middle Fork, and build four fish ladders on Rock Creek. By the end of 1989 we had treated only 1.1 miles of the mainstem and administered several small maintenance and repair contracts for projects which were completed in previous years.

Several factors interacted to result in the greatly reduced level of implementation in 1989. Though landowner indecisiveness and indifference to the program certainly affected our intended implementation schedule, administrative problems had an equal or greater negative impact. Administrative problems which adversely impacted the program included: 1) a new "in lieu of" funding interpretation with regards to fish passage projects, 2) prolonged contract negotiations with the BPA which resulted in delayed contract signing and project implementation, and 3) a mid-season directive from the BPA stating that all leases for 1990/91 work had to be signed by December 1, 1989.

The decision on "in lieu of" funding eliminated the four fish passage projects on Rock Creek.

Landowner indifference, and prolonged contract negotiations with the BPA resulted in a lack of signed leases before contract deadlines, no time to solicit leases in back-up areas, and minimal time to procure materials and implement projects.

The directive to have leases signed by December 1, 1989 caused field personnel to drop the remaining implementation and maintenance activities by early September and concentrate all efforts on lease procurement for 1990 construction.

It is assumed that the 1989 contract period was a "worst case scenario" for field implementation. With leases already in place for

1990 implementation purposes and a committment from BPA to procure funds much earlier, it is anticipated that the amount of new work accomplished in 1990 will greatly exceed that of 1989.

REFERENCES

- Binns, A., 1967, Peter Skene Ogden: fur trader: Portland, Oregon, Binfords and Mort, 363 p.
- Oliver, H., 1962, Gold and Cattle Country: Portland, Oregon, Binfords and Mort, 312 p.
- Hazeltine, I.B., 1954, Letter to Mr. Chester R. Mattson Oregon State Fish Commission dated March 20, 1952.

mlmb:annual

Appendix A
PHOTOGRAPHS



Fox Creek

Leland McGirr Property

Top: 1987

Bottom: 1989

Season long cattle grazing had left this creek with a wide, shallow profile that caused extreme water temperatures, provides little fish: cover and provides far very little bank storage of water. Riparian corridor fencing has allowed the vegetation to return and provide recovery for these undesirable conditions. After only two years of rest this stream reach has narrowed and deepened, began forming new banks instead of eroding them and flows with cooler water in the summer,





Fox Creek

Bud McGirr Property

Top: 1987

Bottom: 1989

Narrowing and deepening can also be accomplished by installing a rock checkdam and raising the water table.

Here we show one just constructed in the top photo and after 2 years in the bottom photo, allowing vegetation to recover will shade the water and allow it to remain even cooler.





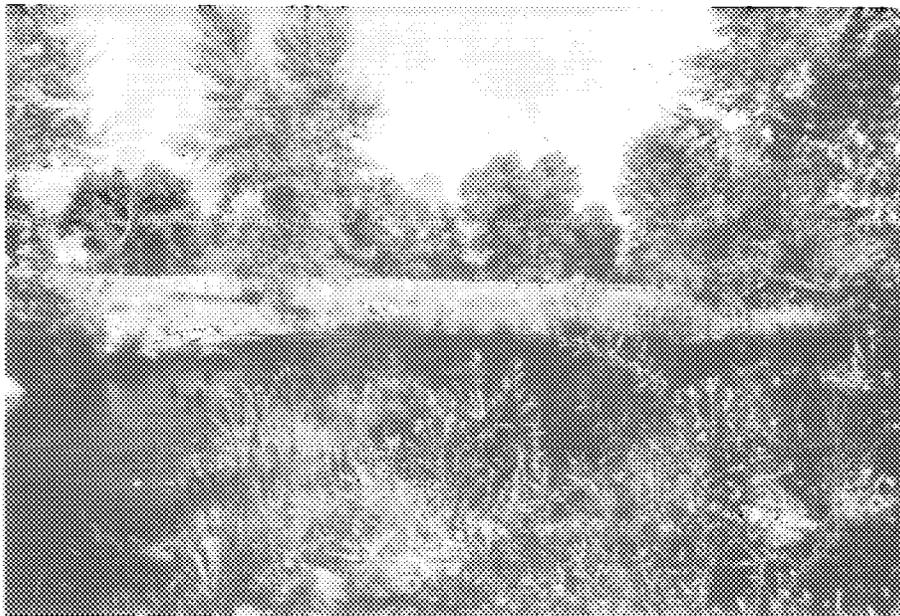
Mainstem John Day River

Alfred Coombs Property

Top: 1985

Bottom 1989

Narrowing and deepening of a stream reach is a very effective way to reduce stream temperatures. Here we accomplished this by armoring an eroding bank and excluding livestock.





Minstem John Day River

Alfred Coombs Property

Top : 1985

Bottom 1988

The top photo shows a cutbank being eroded during spring flows within our Spring Chinook spawning grounds. This sediment later settles in and upon the salmon redds and smothers the eggs.

Erosion structures were placed to end the cutting, provide deep pools, and create more fish rearing cover, Riparian fence was constructed and now many cottonwood starts are visible that will eventually shade the river and provide bank support.





Mainstem John Day River

Dana Holmstrom Property

Top : 1985

Bottom 1989

The top photo shows a wide, flat, featureless section of the river with a small jetty constructed at the landowner's expense. Very little fish cover exists. We were able to come in and construct the proper amount of jetties and insert some habitat boulders to narrow and deepen the channel and provide much more fish cover. Livestock exclusion has allowed streambank vegetation to begin a strong recovery.





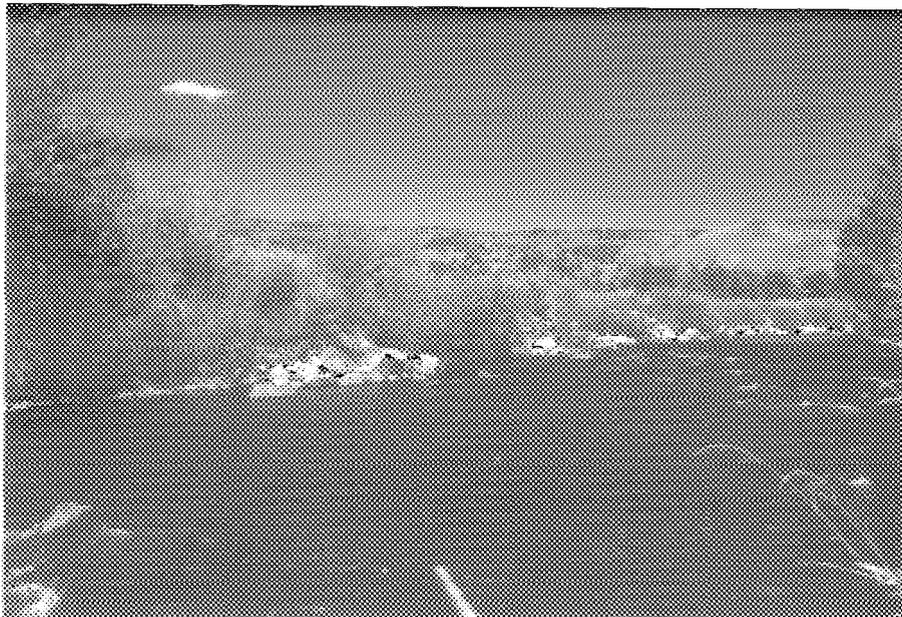
Maifestem John Day- River

Dona Holmstrom Property

Top: 1985

Bottom 1989

Treeless riverbanks are the reason for a lot of problems affecting fish. With no shade the water temperatures become lethal, with no root masses the banks fall apart, and with no woody debris you get very little fish cover. This area demonstrates how to grow trees on a 4 ft. vertical bank. We used structures to collect sediment and fence to exclude livestock. After 4 years we now have young cottonwoods 8 to 12 feet tall.



Appendix B

MIDDLE FORK FISH HABITAT INVENTORY

MIDDLE FORK JOHN DAY RIVER

Intro: Phipps Brothers Property, Township 11 S, Range 35 E, Section 25.

Easy access for work with heavy equipment. Easy access for riparian fence work; meandering channel could make fence work more difficult.

Results:

- 1. Pool averages ranged from 32% in the first mile of section to 83% in the section mile of section; overall average was 58%. Glide run percentages ranged from 8% in the first mile to 5% in second mile; average, for glide run was 21.90%. Riffle percentage averages decreased from 29% in the first mile to 11% in the second mile; average for section was 20.1%**
- 2. Instream pool cover averaged 42.56% for section. The debris class is 1A. A lot of aquatic vegetation throughout section: Considerable amount of algae on substrate first mile of section. A lot of sediments on substrate upper mile and half of section.**
- 3. The average vertical bank height for section was 4 foot on right bank and 1% feet for left bank. Up the 3 foot cut banks in section. Cattle have made dirt rolling areas in flood plain. Small gravel bars. Gravel is the main substrate overall in section.**
- 4. Some riparian vegetation in first subsection. Rest of section is void of woody vegetation. Alder and Ponderosa pine in first subsection.**
- 5. Temperatures: 8-10-89 ambient 86°F-72°F, Water 65°F-68°F. (11:00 am - 6:05 pm).**
- 6. A lot of small fish, mainly trash fish. Two salmon male and female, one salmon carcass on bank. Some crayfish.**
- 7. Wildlife observed: 4 watersnakes, 6 frogs, 1 red-tailed hawk, 2 mallards, 14 Greenwing teal, 2 sandhill cranes, 1 Wilson's snipe. A lot of beaver activity upriver; some beaver holes in banks.**
- 8. First 1/2 to 3/4 mile below crossfence in Phipp's meadow has hummock grass overhanging into stream Cattle in meadow upriver of crossfence. Short grass on streanbank. Cattle rolling areas in flood plain.**

Discussion:

Meandering channel with small flood plain. Several creeks intersection with river channel in section. Abundant aquatic vegetation. A lot of sediments on substrate, some algae on substrate. Considerable amount of grazing pressure. Cut banks up to 3 feet in height. Many ducks throughout section. Only riparian vegetation is in first subsection. Some beaver activity.

Conclusion:

Riparian fence work would be beneficial on upper mile and half of section. Willow could be planted. Weirs could also be placed in some areas.

El/12

MIDDLE FORK JOHN DAY RIVER

Intro: Vidando's Property; Township 11 S, Range 35 E, Section 21 and 22.

Easy access for work with heavy equipment. Easy access for riparian fence work.

Results:

- 1. Pool averages stayed relatively the same around 20%. Average dropped slightly , 5% in last mile of section. Glide run percentages lowered slightly from beginning to end of section. Riffle percentages increased 20%. Averages for section: % pool = 20.45; % glide run = 54.72; .% riffle = 24.84.**
- 2. Instream pool cover averaged 45% for entire section. The organic debris class is 1A. A lot of aquatic vegetation in first 2 miles of section. A lot of sediments on substrate throughout section.**
- 3. The average vertical bank height was 0 feet for both banks. Four feet was maximum cut bank; however, some bank stabilization work could be applied to section. Quite a few undercut banks and streambanks sluffing into river due to extensive grazing pressure and cattle trampling. Gravel bars are mainly small.**
- 4. Vegetative riparian cover is poor first 2 miles of section. Last mile of section averaged 30% deciduous cover over 5 feet high. Vegetation consisted of hawthorn, alder, Ponderosa pine, lodgepole, cottonwood, and snowberry. Provided a fair amount of shade on part of last mile of section.**
- 5. Temperatures: 8/8/89 ambient 80°F-64°F, water 61°F-66°F (10:45 am - 5:50 pm); 8/9/89 ambient 68°F-73°F, water 64°F-72°F (10:00 am - 5:45 pm).**
- 6. Fish observed: a lot of small trash fish. Many freshwater muscle beds.**
- 7. Wildlife observed: 13 American mergansers, 1 domestic duck, 6 Greenwing teal, 1 spotted sandpiper, 1 killdeer, 3 mallards, 2 watersnakes, 5 frogs, 2 red-tailed hawks, 2 Greenwing teal ducklings, 3 mule deer does, 2 fawns, 1 coyote pup.**
- 8. Extreme cattle grazing on first mile of section. Some bare ground, mullins, thistle, cheatgrass, banks sluffing into river. Horses in enclosed fence just downriver of Bates Bridge have also grazed area efficiently. Second mile was currently being grazed at time of survey, but looked in better shape than downriver. Upriver of Highway 7 was subjected to a fair amount of grazing pressure. There were only 10-15 head of herefords in meadow when survey was completed.**

Discussion:

Lower mile was grazed heavily. Banks sluffing into river, a lot of cattle trampling on streambanks. Two dams on river just downriver from Bates Bridge, many ducks along first 2 miles of section, probably because of abundant aquatic vegetation. Substrate type was difficult to determine because of aquatic vegetation and sediments. Clear Creek intersected with river, right bank, first mile of section. Meandering river channel slow water flow for most of section. Some hardpan upriver of Bates Bridge in small canyon between meadows. Most of vegetative cover was in last mile of section.

Conclusions:

Riparian fencework needed on most of section. Most of section too shallow for instream diversion work. Bank stabilization work would be helpful. Planting of willow would also be beneficial.. Some good spawning gravel in section, but a lot of aquatic vegetation covers a great majority of it.

El/12

WIDDLE FORK JOHN DAY RIVER

Crossfence Upriver of Caribou Creek to Middle Fork Road Overpass (culvert).

Intro: Forests Property; Township 11 S., Range 35 E., Section 13, 18, 19, 20, and 21.

Easy access for work with heavy equipment with exception of last ½ mile of sectin. Fence access easy entire section.

Results:

- 1. Pool percentages decrease as progress through section from 34% to 14T. Braid percentages increase from 48% start of section to 66% end of section on average. Riffle percentages stay approximately the same around 20% Average for section: % pool = 21.42; % glide run - 59.87; % riffle - 18.71.**
- 2. Instream pool cover varies on the average from 8% to 28%, with the average for entire section being 15.53% The organic debris class is 1A. A lot of algae and sediments on substrate. Upper mile of section has a lot of aquatic vegetation.**
- 3. The average vertical bank height is 0 for both sides of the river in section. There is no hardpan, and predominate substrate type is cobble on average for section. Small gravel bars. A lot of rock jetties in section. Several irrigation dams across river. Considerable amount of rock rip rap. Some undercut banks, most of cut banks are small.**
- 4. Riparian vegetative cover is very poor for section. Only a few trees, mainly restricted to last mile of section. Cattle have browsed alder and willow in lower miles of section. Main woody vegetation observed: currant, alder, hawthorn, Ponderosa pine, willow.**
- 5. Temperatures: 8/4/89 ambient 78°F-62°F, water 56°F-72°F (10:00 am - 5:20 pm); 8/7/89 ambient 78°F-71°F, water 61°F-68°F (10:00 am - 5:00 pm).**
- 6. Fish observed: 37 salmon, lots of whitefish, 1 dead trout (one to angling). Considerable amount of small trash fish.**
- 7. Wildlife observed: 10 spotted sandpipers, 1 red-tailed hawk, 2 killdeer, 1 great blue heron, 1 turkey vulture, 4 greater Columbia Basin geese, 1 Wilson's snipe, several cedar waxwings, 1 frog, 7 watersnakes, 5 Greenwing teal, 1 mallard.**
- 8. Excessive grazing by cattle with exception of last mile. Virtually no deciduous or coniferous vegetation until last mile of section. 100-200 head of cattle on pasture at time of survey.**

Discussion:

Streamside vegetation is poor most of section. Upper mile has alder, hawthorn, and reasonable good grass vegetation. A lot of aquatic vegetation in upper mile of section. A lot of rock jetties in section and a lot of rock rip rap.

Conclusion:

Riparian fence needs to be built from Caribou Creek crossfence to crossfence just below houses on upper mile of section. Some instream diversion work could be done on some areas specified in subsection field notes. Willow planting after fencing would probably be also beneficial. Dead Cow Gulch intersects with river in mile 3 of section. Davis Creek intersects with river in mile 3 of section. Placer Gulch intersects with river in mile 4 of section. Bridge Creek intersects with river in mile 5 of section. Vinegar Creek intersects with river in mile 4 of section. All creeks could use riparian fence work also.

E1/12

MIDDLE FORK JOHN DAY RIVER

Intro: Oxbow Ranch Property; Township 10 S., Range 34 E., Section 35, 36, 5, and 6.

Easy access for heavy equipment almost entire section except for last mile and with exception of some irrigation water canals. Access for fencework is easy on lower part of section, upper 2 miles would be more difficult due to alder and hummock grass.

Results:

- 1. Pool percentages increase in fourth and fifth mile of section. Deep pools, some difficult to determine depth. Riffle percentages decrease approximately 10-15% from beginning of section. Glide run percentages fluctuate. Average for section: % pool = 21.26; % glide run = 52.06; % riffle = 26.66.**
- 2. Instream (pool) cover varies in average from 10-35% throughout section. A lot of aquatic vegetation in fourth mile of section. Organic debris class for section is 1A.**
- 3. Vertical bank height averages 1 foot throughout section. No severe cut bank to speak of; however, there is a 5 foot cobble-gravel, dirt mix bank that angles down to river in third mile of section. This is from early dredge mining activity. Grassy vegetation in this area is in poor condition; considerable amount of bare soil, mullins, rabbit brush, cheatgrass, and thistle.**
- 4. Temperatures: 7/26/89 - ambient 86°F, water 72°F @ 4:30 pm; 7/27/89 - ambient 88°F, water 72°F @ 4:20 pm; 7/31/89 - ambient 70°F, water 62°F-74°F (10:00 am - 5:15 pm); 8/1/89 - braid channel ambient 70°F-66°F, water 58°F-68°F (11:00 am - 5:20 pm); 8/3/89 - ambient 64°F-80°F, water 61°F-71°F (10:45 am - 4:40 pm).**
- 5. Vegetative riparian cover is poor the first 3 miles of section. After crossfence upriver from start of braid, the cover improves. Quite a lot of alder and hummock grass. Up to 50-70% of streambank cover is deciduous trees above 5 feet high. Vegetation consists of red osier, elderberry, raspberry, alder, hawthorn, wild rose, cottonwood, willow, currant.**
- 6. Fish observed: 6 salmon, 1 10" rainbow trout, some small trout in braid section. Quite a few dace and trash fish, mainly small in braid area. Whitefish were prolific throughout section. Some freshwater muscels.**
- 7. Wildlife observed: 7 spotted sandpiper - 2 chicks, 1 Wilson's snipe, 1 Virginia rail, 1 killdeer, 7 frogs, lots of black birds, robins, and cedar waxwings, 1 buck and 1 doe mule deer, 12 watersnakes, some balding ground squirrels.**

8. Severe cattle grazing up to crossfence near mouth of Butte Creek. Pasture land very poor in places downriver of Butte Creek. Over 150 head of cattle on lower part of section downriver of lower bridge over Middle Fork.

Discussion:

Rangeland is poor for most of property. Some standing water in pasture land, good habitat for ducks and rails. Cattails, algae, and swangrass in ponds. Some duck nesting stands near ponds. Vegetation upriver of Butte Creek is very good. A lot of hummock grass and some willow.

Conclusion:

Certain areas mentioned in field notes could use instream diversion work. Quite a few rock jetties in first 2-3 miles of section; Rock rip rap. Two sandstone cliffs in section. Lower cliff (approximately 50 paces downriver of lower bridge over Middle Fork) has a $4\frac{1}{2}$ foot pool underneath. Good holding for water for chinook and other fish. First 4 miles of river could use a riparian fence to keep cattle off streambank. Butte' Creek could also be fenced. Weirs could be placed in first mile of section.

El/12

MIDDLE FORK JOHN DAY RIVER

Bridge upriver of Camp Creek Mouth -- Double fence row.

Intro: Lavelle property, Township 10 S., Range 33 E., Section 19, 20.

All of section is easily accessible for stream work with equipment. Also easily accessible for fence work.

Results:

- 1. Pool percentage decreases as progressing upriver. Nice pools up to 5 feet deep in section, however. Glide run percentages also decrease upriver from start of section. Percentage of riffle increases from start of section. Averages for entire section: % pool is 18.61; % glide run is 50.17; % riffle is 31.22.**
- 2. Instream (pool) cover varies from average of 21% in first mile of property to 6% the second mile. Organic debris class varies from 1B to 1A through section.**
- 3. No hardpan to speak of in section. Cobble is the main substrate. Some severe cutbanks up to 6 feet and 8 feet in several parts of section, but average bank height in subsections was 1 foot on both banks. Some wide floor plains in parts with respect to stream width, only a few small gravel bars.**
- 4. Average of 15% vegetative riparian cover on first mile of section, 5% on second mile. Not much cover as a whole throughout section. Hawthorn, Willow, cottonwood, some raspberries.**
- 5. Temperatures: 7-18-89 ambient 72°F-90°F water 62°F-74°F (9:30 am - 4:40 pm); 7-19-89 ambient 78°F-86°F water 62°F-76°F (9:30 am - 4:30 pm).**
- 6. No fish documented.**
- 7. Wildlife observed: 3 spotted sandpiper, 2 killdeer, 1 Savana sparrow. Many redwing and Brewers blackbirds, some belding ground squirrels, 1 Wilson's snipe, 6 watersnakes.**
- 8. Extensive cattle tramping upriver of first cross fence to bridge on Lavelle's private driveway. Streamside grassy vegetation is good upriver of bridge, and fair upriver of Camp Creek Bridge. Over 100 head of cattle in pasture, middle of section, during survey.**

Discussion:

Property is in fair shape overall. Except for area that is accessible for cattle.

Conclusion:

Considerable amount of rock rip rap throughout section. Many rock jetties on property. Could use some instream diversity in parts. A few good places for weirs in first mile of section, specified in field notes on subsection sheets. Area that is accessible for cattle could use fence work. Most of the willow in section is small, could use more planted along streambank.

A/9

MIDDLE FORK JOHN DAY RIVER

Double Fence Row -- USFS land upriver near Sunshine Guard Station

Intro: Deardorff Property, Township 10 S., Roande 33 E., section 26, 27, 28.

Mbst of section is accessible for work with heavy equipment, with exception of swanpy irrigated pasture part of section. Easily accessible for fence work.

Results:

- 1. Pool percentages decrease somewhat as progress through section. Glide run percentages vary only a small amount and is the major flow feature in section with exception of a few areas. Riffle percentages increase from start to end of property. Average for section: % pool is 14.52; % glide run is 49.28; and % riffle is 36.02.**
- 2. Instream (pool) cover averages less than 20%. Debris class varies from 1A to 1B with the majority of debris being small floatable debris such as twigs and leaves.**
- 3. Certain amount of cut bank up to 4 feet of vertical bank, not as critical as some down river, however. Quite a few gravel bars, more than down river. Sandstone cliff in section with hardpan substrate and a few large sandstone boulders in stream (Did not get included in subsections, only mentioned in field notes.) The main substrate throughout section is cobble.**
- 4. Average of 30% deciduous vegetative riparian cover over 5 feet high along section provided a fair amount of cover for water. Coniferous vegetation accounted for 5% of stream side vegetation overall. Deciduous vegetation less than 5 feet high accounted for less than 5% of streamside riparian vegetative cover. Section could use more willows planted along banks as cattle have grazed off the majority of willow. Wide diversity of woody plant species in section. Hawthorn, cottonwood, Ponderosa pine, red osure, wild rose, elderberry; tamarack (Western larch), fir, snowberry.**
- 5. Temperatures: 7-20-89 ambient 82°F-84°F, water 66°F-78°F (10:00 am - 4:30 pm); 7-24-89 ambient 69°F-84°F, water 66°F-76°F (10:00 am - 4:30 pm); 7-25-89 ambient 62°F-98°F, water 62°F-76°F (9:45 am - 4:45 pm).**
- 6. Fish observed: 5 salmon straight south of Deardorff's house that is near the Middlefork Road. One 12" Dolly Varden, many trash fish.**

7. **Wildlife observed:** Some cedar waxwings, 1 sandhill crane, 1 flicker, 15 spotted sandpipers, many robins and blackbirds, 1 killdeer, 4 kingfishers, 20 frogs, 7 water snakes, 3 chipmunks, 15 mallards mostly juveniles, several fresh water mussel beds, 1 mule deer doe, 1 female fawn, 2 mink.
8. Several cattle grazing in parts of section, stream bank looks like lawn, willow browsed. Some parts of section acceptable grazing pressure. Mainly Angus and herefords in pasture land. Second mile of section is subjected to heaviest grazing pressure. Several cross fences separate pasture lands.

Discussion:

Areas that have been excluded from cattle are good for grassy stream bank vegetation. Upper 2 miles of section has a wide variety of woody vegetation. Dunton Creek intersects with river at start of mile 2 of section. Big Boulder Creek (temperature 66°F at 4:30 pm on 7-24-89) intersects with river in mile 4 of section. Some good pools 6-7 feet deep in the middle of section. Second mile and fourth mile are subjected to heaviest grazing pressure. Many dead snags near stream bank which provide niches for a wide variety of bird species. Considerable amount of standing water in pasture land for irrigation. Small ponds covered with algae and swampgrass provide good habitat for waterfowl and shore birds; some passeriformes as well.

Conclusion:

Creeks intersecting with river could use fencing to alleviate cattle trampling; also riparian fence work would be good for entire stretch of river. Waterfowl nesting stands by standing water could be helpful for better duckling survival, as there are a fair amount of mink in area as well as other predators. There is a considerable amount of rock jetties and rock rip rap throughout the section. Banks between rock jetties seems to be rebuilding well. Instream diversion boulder work would be helpful in a few places along section as mentioned in subsection field notes. Section needs willow planted next to stream also and possibly better cattle management in those areas. Last mile of section is mostly shallow, possibly could use weirs in several places.

**MIDDLE FORK JOHN DAY RIVER
Galena -- Gibbs Creek**

Intro: Landowner?, Township 10 S., Range 32 E., Section 12, 13, and 18.

All of section easily accessible for work with backhoe or trucks with exception of a few swampy areas. Easily accessible for fence work.

Results:

- 1. Pool percentages increased from beginning of section to end. Glide run percentages also increased for the most part. Riffle percentages decreased. Average for section: % pool is 20.60; % glide run 36.81; % riffle is 42.84.**
- 2. Instream (pool) cover was low in section, under 15% when looking at overall averages per mile. Organic debris class 1B.**
- 3. Small piece of hardpan in section. Mainly small gravel bars. Some severe cutbanks up to 8 feet of cut.**
- 4. Vegetative riparian cover gets more abundant in upper part of section. Fairly sparse in lower part. Meadows throughout section. Ponderosa pine, cottonwood, alder, hawthorn, snowberry, wild rose.**
- 5. Temperatures: 7-13-89 ambient 84°F-91°F water 66°F-74°F (10:30 am - 2:30 pm); 7-17-89 ambient 64°F - 84°F water 60°F-72°F (9:00 am - 5:00 pm).**
- 6. Aquatic life present: A lot of fish in braid portions of the river, mainly trash fish, some small trout. Many stoneflies. Some freshwater mussels scattered throughout section.**
- 7. Wildlife observed: 7 spotted sandpiper adults, 3 chicks; many swallows; 1 kingfisher; 8 watersnakes. Some beaver activity. One sandpiper egg found in river.**
- 8. Some sign of cattle trampling. Horses grazing streambank at time of survey. Severe overgrazing in some parts of section mainly confined to middle part of section.**

Discussion:

Property was not in good shape. Considerable amount of white cap in meadow near Gibbs Creek. Other unwanted species throughout such as mullins, cheatgrass, and thistle. Mainly shallow water, not much in the way of spawning potential.

Conclusion:

Cut banks or eroded banks could use rock jetties or juniper rip rap. Weirs could be placed in a few spots in section. Needs fencing along banks. Section could use some diversion work in a few areas.

A/9

MIDDLE FORK JOHN DAY RIVER

Intro: Dave Kline Property, Township 9 S., Range 32 E., Section 21, 27, 28, 34.

Most of section is accessible for work with trucks and backhoes. Good access for fence work. Some fence bordering river presently.

Results:

- 1. Pool averages per mile increased upstream from Big Creek; riffle averages decreased, and glide run averages stayed relatively the same. Average per section: % pool is 18.63, % glide run is 39.72, % riffle is 31.65.**
- 2. Instream (pool) cover varied from 5% to 24% throughout section. Brush and hillside at beginning of section provides some cover on river. Organic debris class 1B.**
- 3. One rock bluff on right bank in section. Small amount of gravel bars in section. Cut banks varied from one to three feet.**
- 4. Good vegetative cover at beginning of section, going to meadow and less vegetative riparian cover. Alder, red osure, cottonwood, snowberry, Ponderosa pine, wild rose, hawthorn, willow.**
- 5. Temperatures: 7-7-89 ambient 85°F, 7-10-89 ambient 68°F water 63°F at 10:35 am 7-11-89 ambient 80°F-86°F water 64°F-86°F (10:45 am - 4:40 pm) 7-12-89 ambient 68°F-92°F water 64°F-71°F (10:00 am - 2:45 pm).**
- 6. Fish present: 4 trout observed throughout section. Some sucker and squawfish, mainly small. Also fresh water mussels.**
- 7. Wildlife usage observed: 12 spotted sandpipers and 3 chicks, 2 blue herons, 1 Lewis's woodpecker, 5 morning doves, 1 Savana sparrow, 1 killdeer, multiple robins and blackbirds. One mule deer doe. Three egg shells found in river (sandpiper and killdeer).**
- 8. Certain amount of cattle trampling throughout section. at least 23 head of cattle (angus-hereford mix) in pasture land on right bank upper mile of section. Several cattle along river throughout section.**

Discussion:

Property appears to be in relatively fair shape for most of section, considering stream side vegetation. Section lacks instream diversity. Quite a few rock jetties throughout section and some juniper rip rap. Portions of spawning gravel on tailouts of large pools and slow glide runs.

Conclusion:

Section needs diversion work for the most part. Fencing along streambank would greater enhance willow growth and grassy vegetation. Section appears to have enough rock jetties. Could possibly use a couple of weirs in section to provide for more pool water and raise the water gradient. Also planting of willow would be helpful for section.

A/9