



IDAHO BLM

TECHNICAL BULLETIN

IDAHO RIPARIAN AND AQUATIC PROTECTION AND
ENHANCEMENT PROGRAM

PART B: SALMON DISTRICT THROUGH TECHNOLOGY TRANSFER

by

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(EDITOR)



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Salmon District

Riparian Management Program

by

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**SALMON DISTRICT RIPARIAN AREA
SYNOPSIS AND MANAGEMENT EFFORTS**

INTRODUCTION

The following information concerning Salmon District riparian areas and riparian projects was compiled by Lyle Lewis, District Hydrologist, Loren Anderson, Lemhi RA Wildlife Biologist, and Jerold Gregson, Challis RA Wildlife Biologist.

SALMON DISTRICT RIPARIAN SYNOPSIS

Perennial Stream Miles - 393
Riparian Area Acreage - 11,850 acres
Poor Condition Riparian Area - 10,779 acres
Total Salmon District Acreage - 1,292,000 acres
Percent Riparian Area of District Total - .9%

Lemhi RMP

Perennial Stream Miles - 152
Riparian Area Acreage - 5,527 acres
Poor Condition Riparian Area - 5250 acres

There are approximately 152 miles of perennial streams in the RMP area. The average width of a perennial stream riparian area is calculated as 100 feet. There is roughly three times as much riparian area associated with intermittent streams, wet meadows, springs, seeps, and bogs. Using these figures, the total riparian acreage comes out to 5,527 acres.

In the RMP, unsatisfactory riparian area condition was exemplified by those riparian areas receiving 70% utilization or more on a regular basis. This included approximately 95% of all riparian areas. The result was 5250 acres in unsatisfactory condition.

Pahsimeroi Planning Unit

Perennial Stream Miles - 45
Riparian Acreage - 982 acres
Poor Condition Riparian Area - 798 acres

Riparian acreage was calculated in the same manner as was done for the Lemhi RMP area, except the average width of a riparian area is 60 feet. There are 45 miles of perennial stream and 982 riparian acres of which 930 acres are in unsatisfactory condition. One hundred acres is included within the Summit Creek, Trail Creek, and Burnt Creek exclosures and is either in good condition or will be within three to five years. Using the same criteria as was used in the Lemhi RMP area, 95% or 798 acres of the remaining riparian acreage is in unsatisfactory condition.

Ellis Planning Unit

Perennial Stream Miles - 78
Riparian Acreage - 1690 acres
Poor Condition Riparian Area - 1605 acres

Riparian acreage was calculated in the same manner as was done for the Pahsimeroi Planning Unit. There are 78 miles of perennial stream and 1690 riparian acres of which 1605 acres are in unsatisfactory condition.

Challis Planning Unit

Perennial Stream Miles - 100
Riparian Acreage - 2,176 acres
Poor Condition Riparian Area - 2,053 acres

There are approximately 100 miles of perennial stream and 2,176 acres of riparian area of which 2,053 acres are in unsatisfactory condition. Fifteen acres are included within the Herd Creek enclosure and are in good condition. Ninety-five percent of the remaining acreage is in unsatisfactory condition.

Mackay Planning Unit

Perennial Stream Miles - 18
Riparian Area Acreage - 1,475 acres
Poor Condition Riparian Area - 1,073 acres

There are 18 perennial stream miles in the planning unit. Most are associated with the Sage Creek area. Approximately 40 drainages have no perennial streams, but do support a riparian zone. This is because of the water sinking below the ground, yet still remaining available to some types of riparian vegetation.

Riparian acreage was calculated by multiplying the number of miles of perennial stream by six. This was because of the large number of drainages supporting a riparian zone, but not having a perennial stream. This also takes into account meadows, springs, seeps, and bogs. Also assumed was that an average riparian area is 60' wide. This adds up to 1,130 acres. There are 345 acres of riparian area associated with Whiskey and Thousand Springs. In the planning unit, unsatisfactory riparian condition was calculated the same as with the Lemhi RMP. The result is 1,073 acres in poor condition.

RIPARIAN MANAGEMENT EFFORTS

The following riparian project list may seem long, but the projects actually make up a very small portion of the District riparian resource. A lack of knowledge, flexibility and cooperation from livestock operators has resulted in livestock management systems for riparian improvement being nonexistent. Efforts are now being made to rectify this problem.

1. Herd Creek Project was constructed to improve anadromous fisheries habitat. This is a fenced exclosure. There has been some improvement in vegetative diversity and stream shading. Trespass problems in the exclosure has slowed improvement considerably.
2. Trail Creek Project was constructed to improve vegetative composition in the riparian zone as well as to enhance wildlife habitat. Trespass problems in the first two years after construction adversely impacted the riparian area. The riparian area is now beginning to improve as the trespass problem is rectified. Increased raptor nesting, as well as use by deer, elk and bear, has been observed since construction.
3. Summit Creek Project was constructed to improve resident fisheries habitat in 1976. It was extremely successful as fish numbers and total biomass increased greatly. Significant changes in channel geometry, water column and riparian vegetation is also evident from phototrend studies. Further improvements are planned in the form of beaver introductions for dam building. Improvements in riparian soils in the form of leaching salts from surface horizons are the objectives of this riparian flooding project.
4. Burnt Creek Project was constructed to improve riparian area, fisheries habitat, and wildlife habitat. The project consists of five exclosures with two more planned for FY 1988. Willow regeneration has been dramatic with a corresponding increase in mule deer fawning within the exclosures. Fisheries habitat improvement has been slow due to a combination of factors among which include, a lack of sediment for bank building, three low water years, and earthquake activity. Tree revetment is planned for FY 1988, 89. Successful cottonwood plantings was accomplished in FY 87.
5. Sevenmile Project consists of an electric fence that restricts use in erosive areas as well as the lower Sevenmile Creek riparian area. Project objectives include reducing turbidity into the main Salmon River, improving riparian habitat condition, and improving watershed condition. Trespass has been a problem. The project has not been in long enough to evaluate the objectives. More mule deer have been seen in the riparian zone since fencing, however.
6. Wood Springs Project constructed to prevent the formation of a gully and increase water quantity during summer months. Long range objectives include providing enough water higher in the watershed to exclude livestock from a lower, erosive gully area.

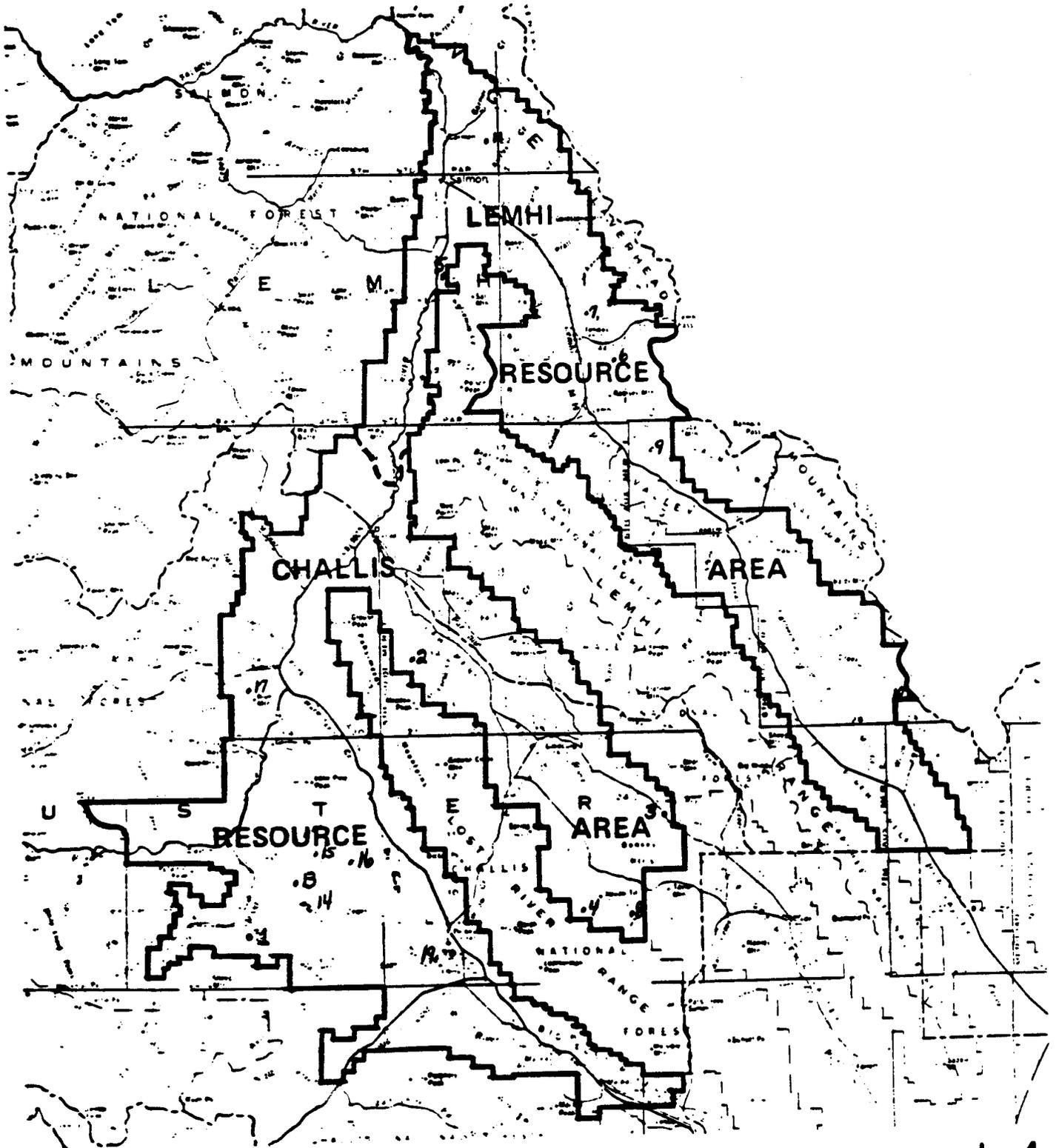
7. Warm Springs Pilot Riparian Project - Objective of the plan is to improve riparian areas without excluding livestock. Five small exclosures were constructed in FY 1987 as comparison areas for other grazed areas. Several grazing treatments are proposed which include deferred rotation grazing with different utilization limits placed on riparian areas. Other objectives have been established for a variety of resources.
8. Short Creek Project includes fencing of an overmature aspen stand. 95% of the aspen will be cut to allow a young productive aspen stand to regenerate. The fence will prevent livestock from utilizing young aspen regeneration. Three acres are included within the fenced area.
9. Peterson Cr. Project description and objectives are the same as Short Creek. Hopefully, an active head cut will be stabilized in the process. The project includes 3-4 acres of aspen riparian area.
10. Eighteen Mile Creek Project will consist of two drift fences to restrict cattle use in Eighteen Mile Creek to a utilization limit of 20%. Tree revetment along some cutbanks is also planned. (FY88 project).
11. Cottonwood Cr. Exclosure Project will consist of a two acre exclosure. Objectives include riparian area improvement, increased water storage, and ultimately water yield during summer months. (FY 88). Significant benefits to sage grouse, hungarian partridge, chukars, and non-game species are expected from this small project.
12. Spring, Meadow Exclosures Approximately 50 one-two acre exclosures are planned for construction in the next five years. In addition to those objectives identified for the Cottonwood Creek Exclosure, these will provide comparison areas to determine management strategies effective in improving riparian areas and by how much. They will improve cattle distribution by preventing cattle from hanging around springs and meadows. They will prevent gullying activity in the vicinity of the exclosures by slowing water velocities in localized areas.
13. Corral Basin The project is a fenced exclosure bordering Corral Creek. The objective was to improve riparian condition and reduce sedimentation into the East Fork of the Salmon River. The exclosure is 20 acres in size and takes in 3/4 of a mile of Corral Basin Creek. The project has been ineffective as livestock have used the exclosure heavily every year. The project was constructed in 1980. Maintenance of the fence and locking the gates will allow for improvement within the area. Photo points, line intercept and belt transects are being established to monitor riparian changes. Cottonwood and Carex plantings will be conducted this year.

14. Mosquito Spr. See Narrative #12.
15. Douglas Spr. See Narrative #12.
16. Willow Spr. See Narrative #12.
17. Kelley Gulch See Narrative #12.
18. Anderson Ranch This project would include 40 acres and will serve as an experimental pasture. After two years of rest, different grazing treatments will be tried. Intensive monitoring studies will track trend. Photo points are already in place.
19. Thousand Spr. Project will include fixing a fence to exclude cows on a Research Natural Area. The project is planned for FY 89.

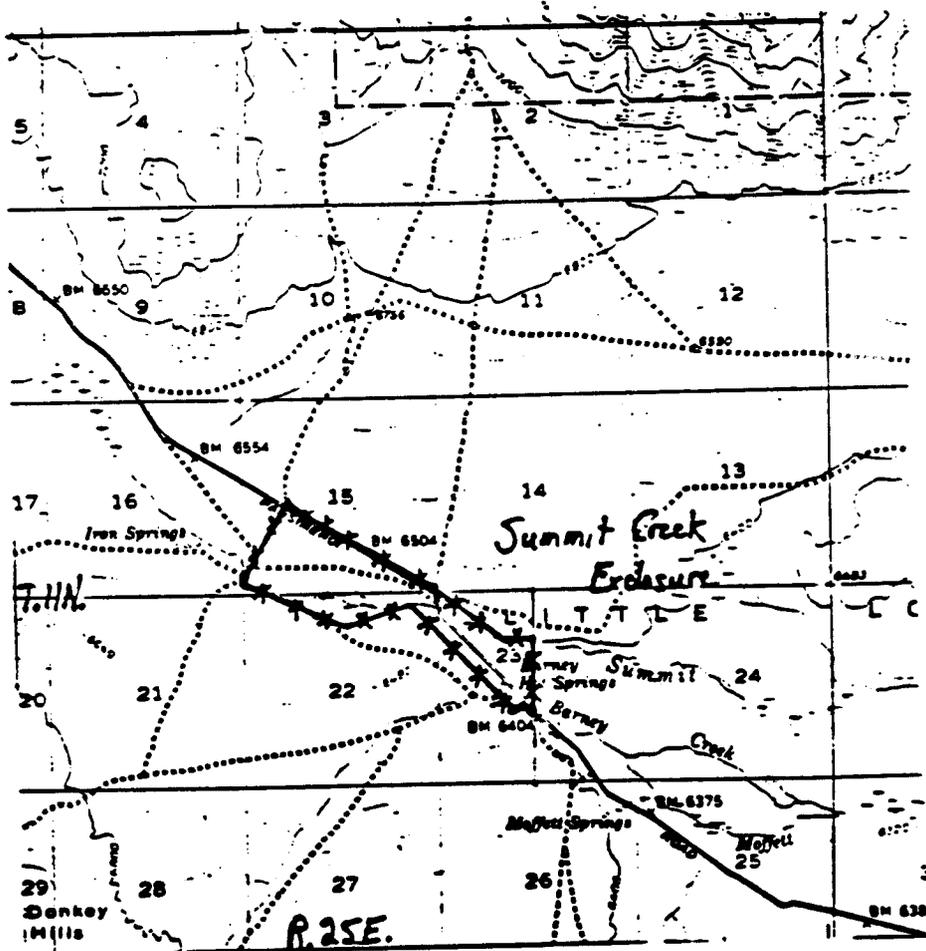
UNITED STATES
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BUREAU OF LAND MANAGEMENT

SALMON DISTRICT

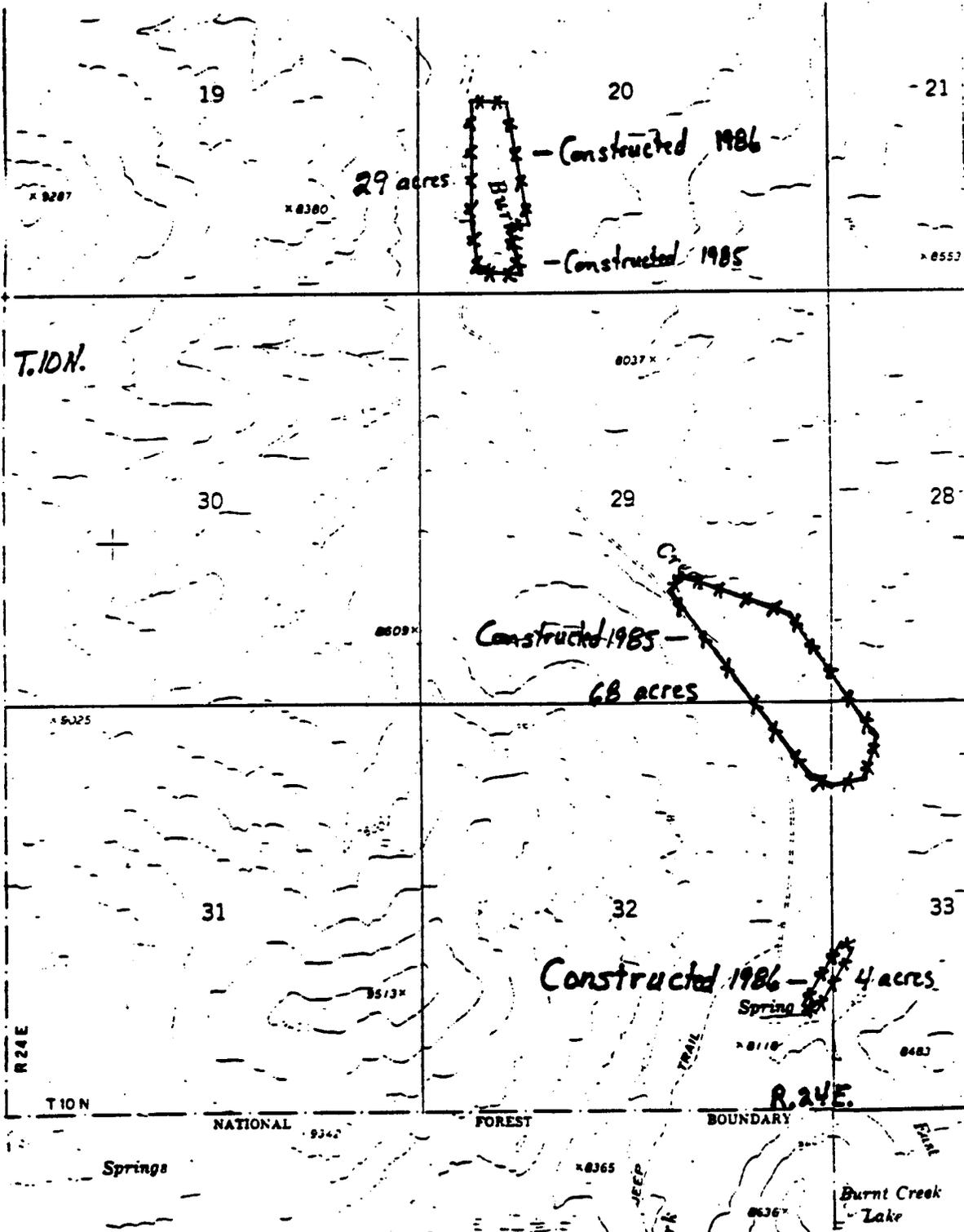
IDAHO



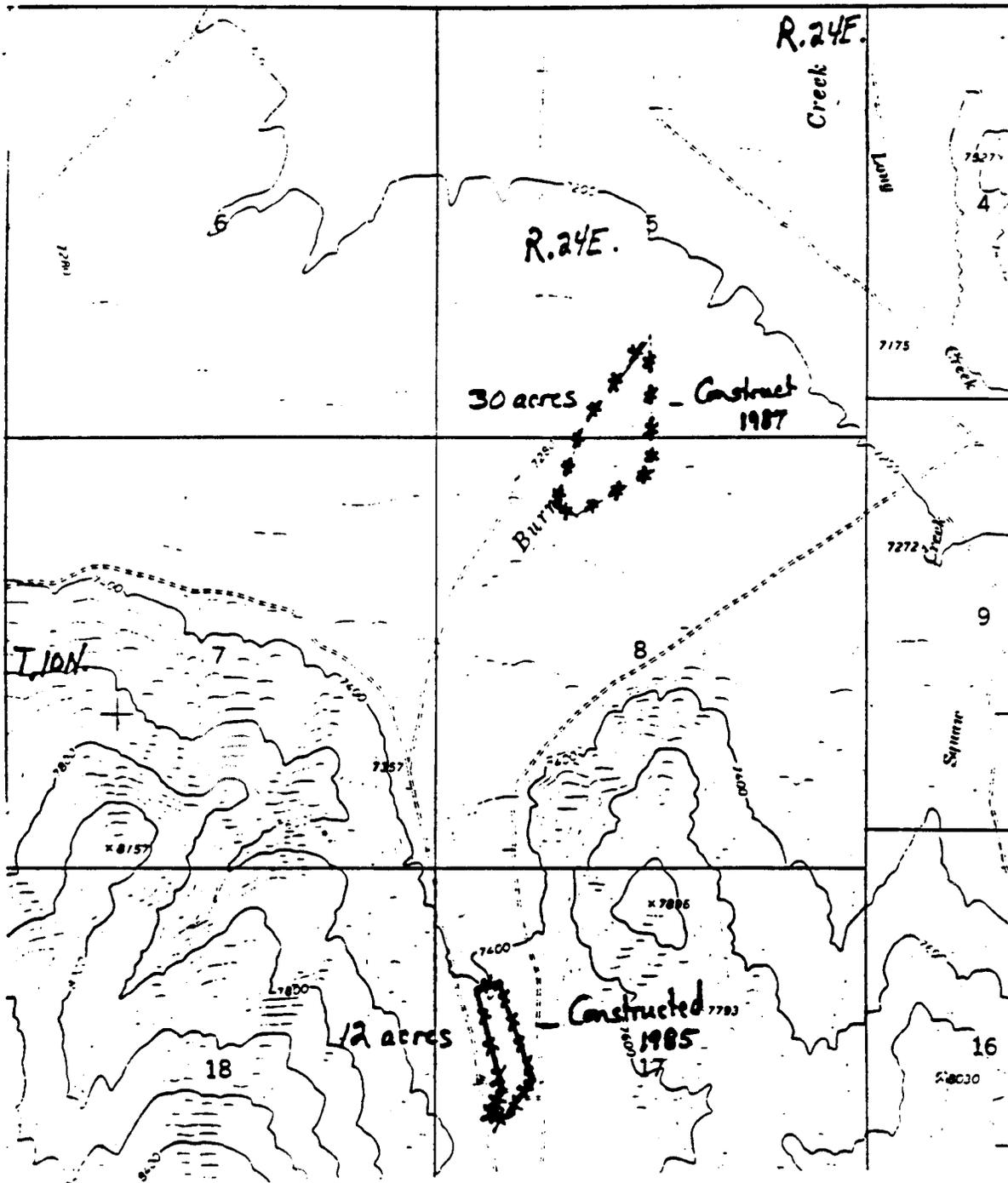
SUMMIT CREEK ENCLOSURE
305 Acres
Constructed 1976



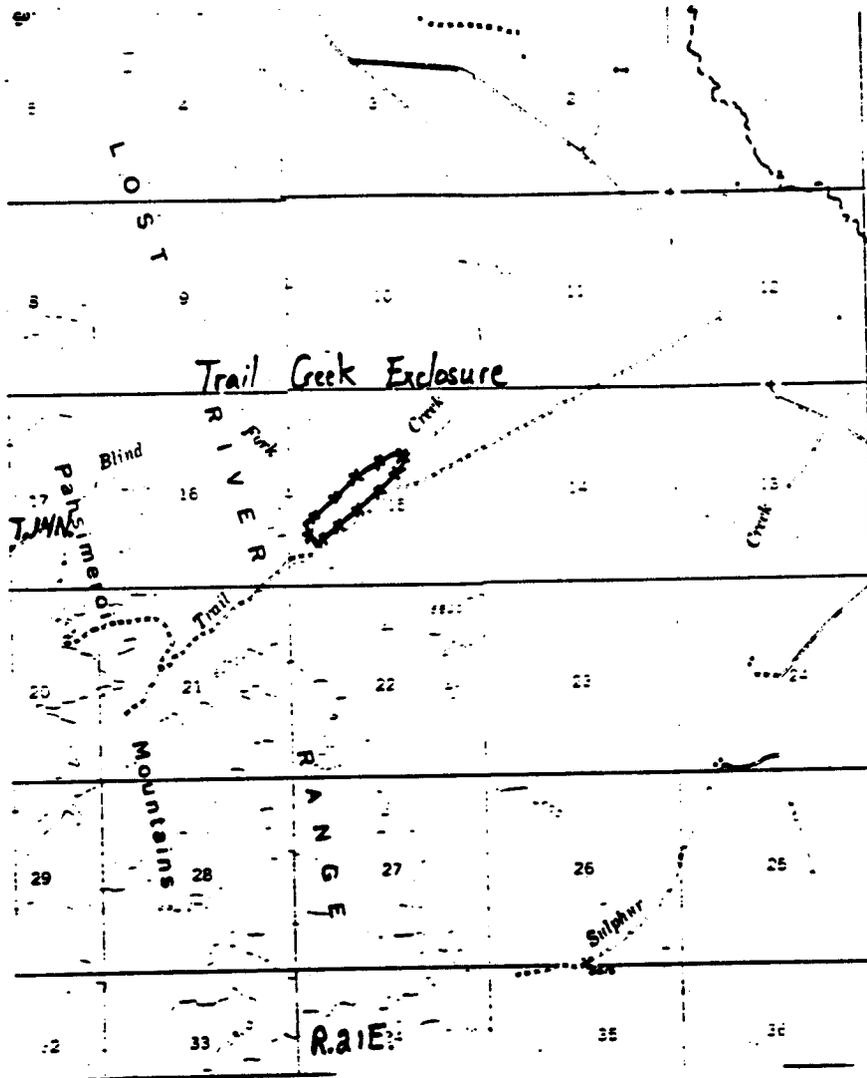
BURNT CREEK ENCLOSURES
 Total acres-143



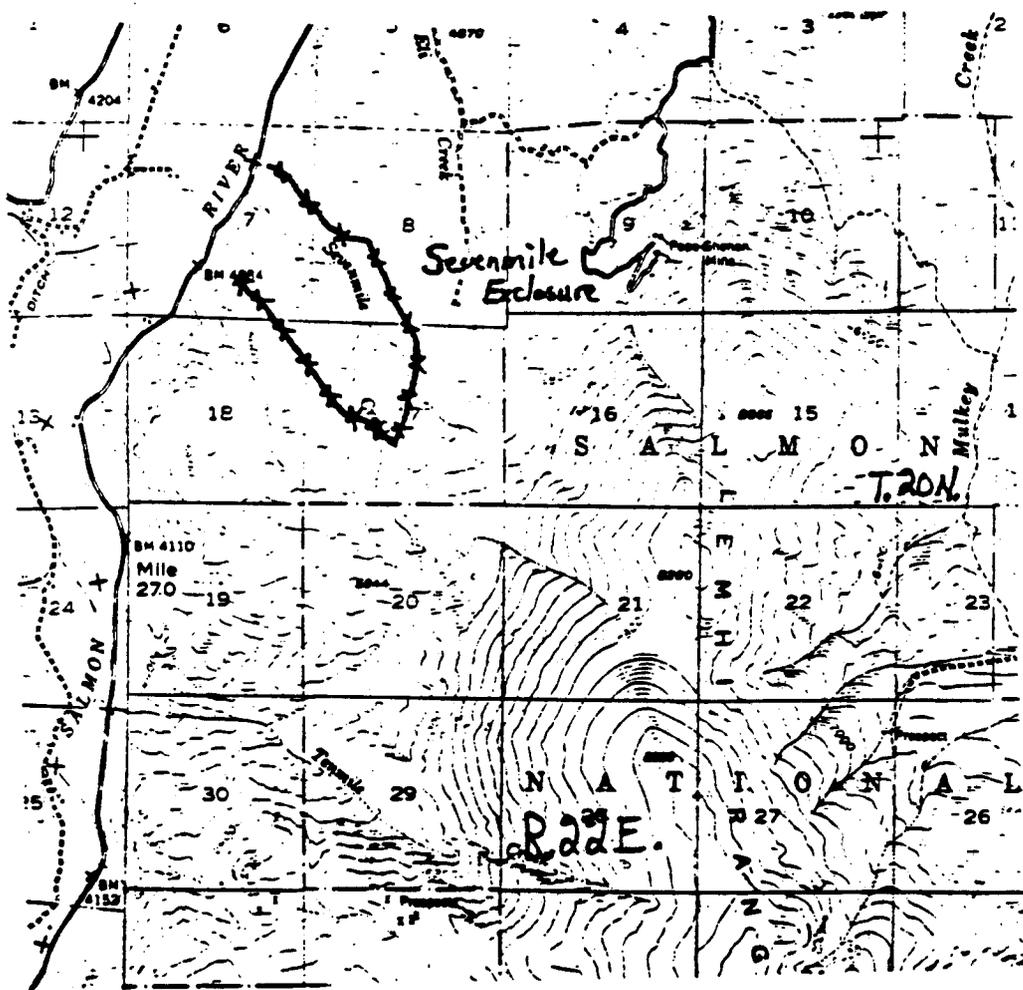
BURNT CREEK ENCLOSURES
Total acres-143



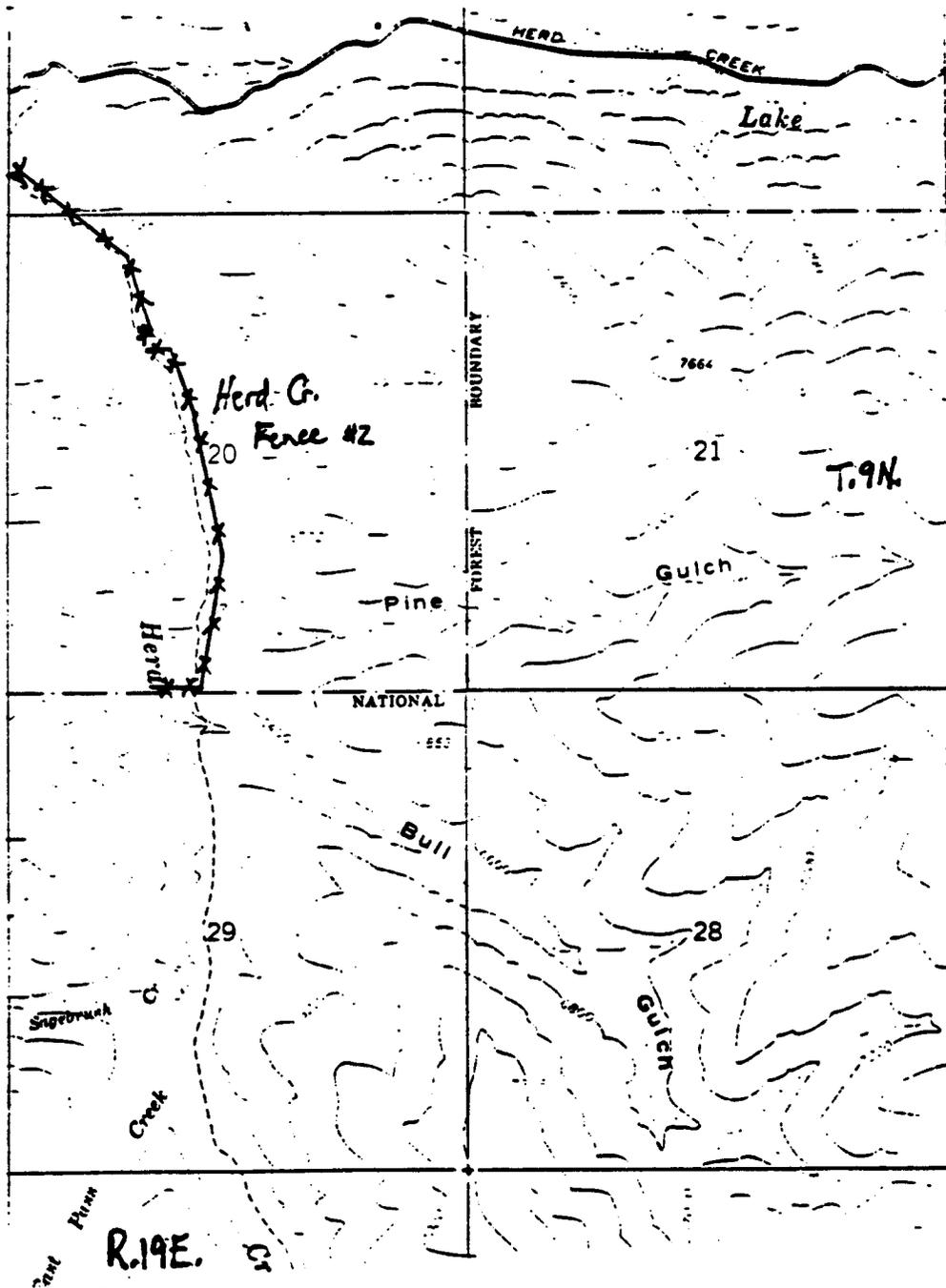
TRAIL CREEK ENCLOSURE
46 Acres
Constructed 1985



SEVENMILE CREEK ENCLOSURE
430 Acres
Constructed 1986

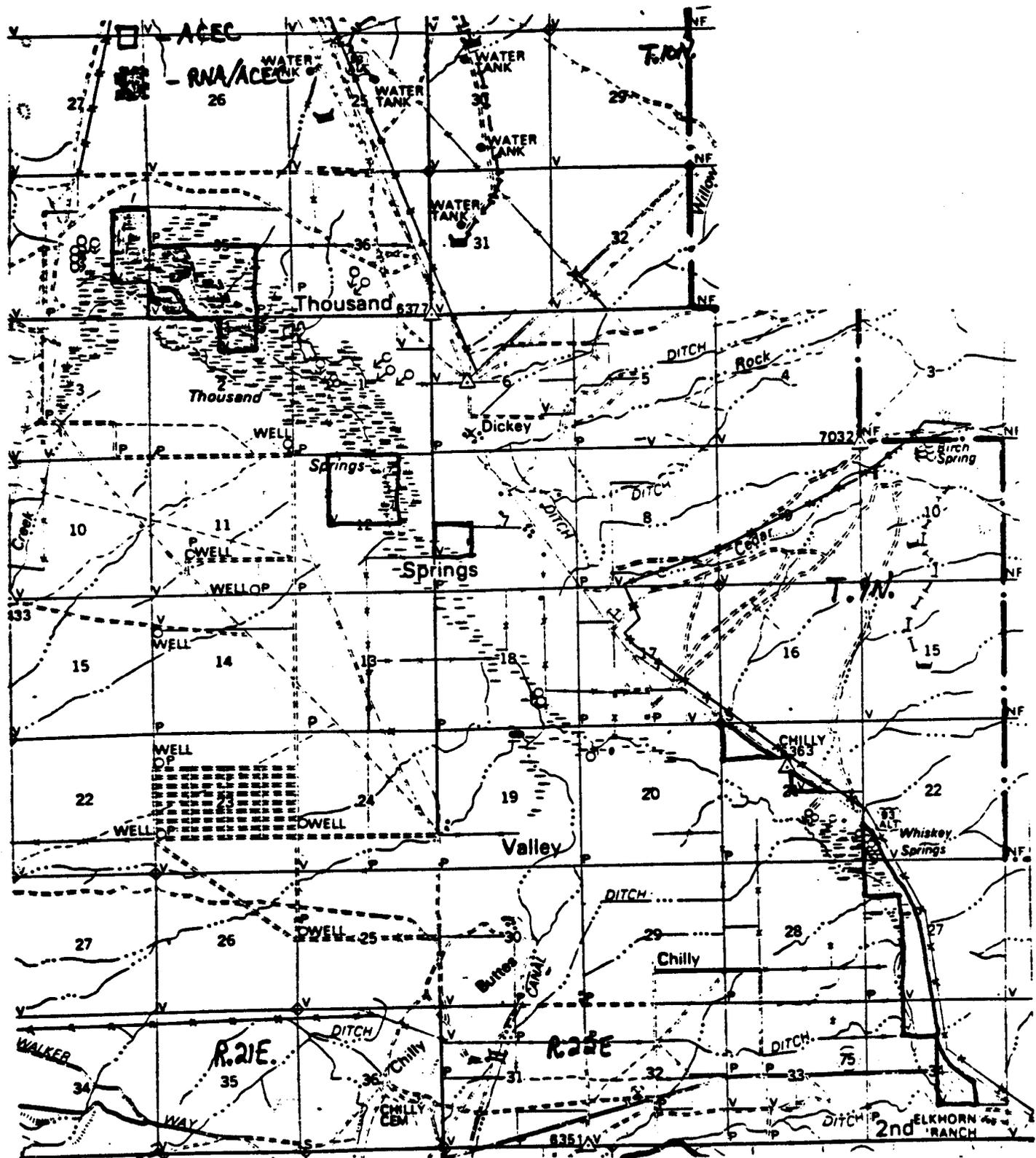


HERD CREEK ENCLOSURE
84 acres
Constructed 1980



THOUSAND SPRINGS PROPOSED ACEC
824 acres

PROPOSED RNA
252 acres



SUMMIT CREEK



Upper segment of Summit Creek near unprotected springs.



Summit Creek showing brushy area and campground (ungrazed).

SUMMIT CREEK



Beaver dams in upper, ungrazed segment of Summit Creek.



Grazed portion of Summit Creek below enclosure.

Shoshone District

Riparian Management Program

by

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SHOSHONE DISTRICT RIPARIAN
MANAGEMENT PROGRAM

LARRY MANGAN
STEVE LANGENSTEIN
LINDA PARSONS
BILL HARRIS

Nature and Extent

Most naturally occurring riparian areas in the District are along the tributaries of the Little Wood and Big Wood rivers and near spring areas scattered across most of the northern and western portions of the District. This includes most of the North Camas, Sun Valley, and Muldoon planning units and the Bennett Hills.

The Shoshone District manages about eight miles of riparian habitat along the Little Wood River and scattered parcels along both the Big Wood and Snake rivers, the two other major rivers.

There is also substantial riparian habitat or potential associated with the many irrigation canals and ditches which cross public land on the Snake River Plain.

Inventory and Monitoring

Two fisheries habitat studies were conducted in 1975 and 1978 in the Shoshone and Sun Valley Grazing EIS areas, respectively. Although these studies, contracted to the Idaho Department of Fish and Game (IDFG), were slanted toward fisheries habitat, riparian values were also evaluated.

The District has selected several techniques for monitoring riparian areas. For extensive monitoring, the District employs low-level aerial 35 mm true color photography to establish a baseline and detect changes in trend. To date, 90 miles of baseline coverage of 27 different streams have been photographed (Table 1). For more intensive monitoring, the District is using a modified "Lew Meyer Method" developed in Montana. We are currently monitoring 20 streams with this method (Table 2).

More intensive methods of monitoring woody and herbaceous vegetation are being used in the Thorn Creek Pilot Riparian Management Area (PRMA) and may be used in other areas as well.

TABLE 1

MILES OF STREAM PHOTOGRAPHED IN
LOW-LEVEL AERIAL 35 MM RIPARIAN MONITORING
IN THE SHOSHONE DISTRICT

Bennett Hills Resource Area		Monument Resource Area	
Stream	Miles	Stream	Miles
Thorn Creek	0.75	Copper Creek	2.50
Portuguese Creek	2.75	West Fork Dry Creek	3.00
Rattlesnake Canyon	6.50	Beaver Creek	2.00
Black Canyon Creek	0.75	Little Wood River	21.50
Catchall Creek	0.75	Dry Creek	3.00
Clover Creek	6.00		
West Dempsey Creek	1.25		
East Dempsey Creek	2.75		
Thorn Creek	4.00		
Preacher Creek	4.00		
Schooler Creek	2.00		
Black Canyon Creek	2.00		
Connant Spring	1.00		
Cottonwood Creek	0.50		
East Fork Clover Creek	7.50		
Squaw Creek	1.25		
Clover Creek	3.50		
Dry Creek West	2.00		
East Dempsey Creek	2.25		
West Dempsey Creek	1.00		
Hog Creek	4.25		
King Hill Creek	1.50		
Totals	58.25		32.00

TABLE 2
INTENSIVE RIPARIAN HABITAT MONITORING
(LEW MEYERS METHOD) IN THE SHOSHONE DISTRICT

Bennett Hills Resource Area	Monument Resource Area
Big Deer Creek	Dry Creek
Cottonwood Creek	Poison Creek
Dry Creek (Gooding)	Rock Creek
East Clover Creek	Lower Rock Creek
Hog Creek	Elk Creek
King Hill Creek	Kelly Gulch Creek
Preacher Creek	Brush Creek
South Fork Lime Creek	Spare Creek
Sheep Creek	
Squaw Creek	
Thorn Creek	
West Dempsey Creek	

Condition of Riparian Areas

Generally speaking, riparian areas at higher elevations, in steep or rugged terrain or in sheep allotments are in better condition than low elevation, cattle allotments with little topographical relief. Although there are exceptions, most areas that have been protected from grazing have responded well to the rest.

In the Shoshone EIS area where 12 streams were surveyed, 28 miles were in good condition, 8.5 miles were in fair condition, and 12 miles were in poor condition. In the Sun Valley EIS area, of the 32 streams surveyed, 5 miles were in excellent condition, 7.7 were in good condition, 9.8 in fair condition, and 9.75 in poor condition.

Management of Riparian Areas

The District has constructed over 41 miles of fence to improve 42 riparian areas. The three major riparian projects in the District are the Little Wood River, Star Lake, and Thorn Creek. There are a number of other riparian projects which we have grouped and will discuss generally by type. All are summarized in Appendix 1.

Major Riparian Projects

1. The Little Wood River is an important brown and rainbow trout fishery in south-central Idaho. Between Carey and Richfield, the river flows through 7.7 miles of public land. Mean annual precipitation at Richfield is 11 inches. There are numerous basalt outcrops and pressure ridges with pockets of very deep, somewhat excessively drained loamy sands to sandy clay loams underlain by sands and gravels. Potential natural vegetation on these soils is basin big sagebrush (Artemisia tridentata tridentata) and Indian ricegrass (Oryzopsis hymenoides).

In areas protected from grazing where there is suitable soil, willows (Salix spp.), water birch (Betula sp.), and wild rose (Rosa sp.) are the common woody plants.

Within this stretch, there are also private and State lands. The State of Idaho acquired land along 3.3 miles of the river. The area, known as Bear Track Williams, is co-managed by the IDFG and the Idaho Department of Parks and Recreation as a catch and release fishery. The reserve has been fenced from livestock use for at least 15 years and the streambanks support dense stands of woody plants.

In 1975, the District fenced a 1.6-mile stretch of the river downstream from Preacher Bridge to protect the riparian habitat. Cattle are allowed to graze this fenced area for two weeks in late August in two of four years as prescribed in the Pagari Allotment Management Plan (AMP).

In a 1980 land exchange, the District acquired 880 acres downstream from Bear Track Williams and, during the next three years, completed fencing the two miles of river associated with the parcel. With the exception of three water gaps, this section is designed to completely exclude livestock grazing.

The Little Wood River had heavy livestock use for over a century. Sheep grazing reached its peak between 1916 and 1920 when approximately 300,000 sheep used the adjacent Wildhorse Allotment. Most of these sheep funneled out of the allotment at either Pagari or Preacher bridges. In the mid-1950s, cattle use began in the Pagari Allotment and was not segregated from the Little Wood riparian areas until sections of the stream were fenced in 1975 and the early 1980s.

Probably as a result of the heavy livestock use along the Little Wood, woody vegetation is generally lacking. The 15+ years of rest afforded the Bear Tracks Williams section, however, has been sufficient to allow the woody vegetation to recover dramatically.

The objective of the fencing program along the Little Wood River has been to improve the riparian and fishery habitat by increasing woody and herbaceous streamside vegetation and arresting streambank erosion.

Herbaceous vegetation has responded well in areas protected from grazing, but woody vegetation has not. This may be due to slower recovery rates of woody plants in severely depleted areas, the paucity of soil in many areas, and the unauthorized livestock use that has occurred since the fencing was completed.

We have completed a number of tree and shrub plantings along the Little Wood to accelerate the establishment of woody vegetation. Most have been unsuccessful because of wide fluctuations in river flows, poor planting stock and technique, and unauthorized livestock use.

Fence maintenance has been a problem, especially at water gaps where pressures from livestock and spring flows are high. Fences have been cut on several occasions.

Regardless of the problems, the Little Wood River has improved substantially. Photographs document significant increases in herbaceous vegetation and a decrease in streambank trampling and soil loss.

To date, most of the project work has been piecemeal as funding was available. No management plan has been written for the entire stretch. The District has made two proposals to acquire more acreage along the Little Wood. About 1.3 miles of stream would be acquired through exchange with the State of Idaho. Contact has been made with the Farmers Home Administration (FHA) on another proposal to acquire a parcel which was recently foreclosed on. The FHA is reviewing our request. This would add 1.7 miles of river to public land management.

An HMP should be prepared on the entire section including the Bear Track Williams reserve. Maintenance, monitoring, and project work would be clearly outlined and coordinated with all entities involved with management along the Little Wood.

2. Star Lake is a major waterbird migration area that provides habitat for thousands of ducks, geese, and swans in the spring and fall and substantial nesting habitat as well. In addition, the area winters substantial numbers of ring-necked pheasants. The wetlands lie at the end of an irrigation canal and owe their existence to it. The Star Lake area had been managed by the IDFG as a Wildlife Management Area until the 1950s when budget cuts forced them to sell it.

In 1981, the Shoshone District completed an HMP for Star Lake. Coordination among the BLM, the Star Lake Cattlemen's Association, the Big Wood Canal Company, and an adjacent landowner has been excellent. In a unique arrangement, the Star Lake Cattlemen's Association purchased 20 shares of water and transferred them to the Bureau. In addition to supplying water for livestock, the 20 shares provide a minimum maintenance level for the wetlands. In most years, the canal company has purposely diverted excess water into the Star Lake area at no extra charge. The District leased 100 shares of water to maintain water in the complex during a dry year.

Livestock grazing is excluded from two of the ponds. Water is available for livestock along the canal before it enters the exclosures, at a water gap adjacent to pond 2, and where the water leaves pond 2 and enters pond 3, which is completely open to grazing. Ponds 1 and 2 are relatively dense stands of cattails (Typha sp.) and bulrushes (Scirpus sp.) and provide excellent nesting habitat for waterbirds. Pond 3 is open water with little vegetation because of a less dependable water supply and livestock grazing. Consequently, it provides the best migration habitat for waterfowl and shorebirds. Overall, there is a good balance between nesting and migration habitat due to the balance of rested and grazed areas.

A grass, forb, and shrub seeding to rehabilitate a major cheatgrass area has been completed and three goose nesting structures installed. Currently, work on the HMP area involves maintenance of the fences, the goose structures, and annual cleaning and repair of the irrigation canal which feeds the complex.

Overall, the Star Lake Riparian/Wetland project has been a positive, multiple-use project.

3. The Thorn Creek PRMA encompasses approximately 6,300 acres in the North Shoshone Allotment of the Bennett Hills Resource Area in the Shoshone District. The grazing management plan for the area identifies about 5.6 miles of Thorn Creek and its associated reservoir, springs, and uplands for specific grazing management and intensive multiple resource monitoring. The plan considers range, watershed, recreation, wildlife, and cultural resources.

Thorn Creek has a long history of man-made impacts including reservoir, power line, and road construction, and livestock over-grazing. Today the stream is heavily downcut with many vertical streambanks. With many of the impacts being well established, livestock grazing seems to be the major factor in continuing the poor condition of the ecosystem. The emphasis of the plan is to alter the grazing season of use and to limit the level of grazing use in the PRMA and, therefore, gradually improve the condition of the PRMA without causing economic hardship on the allotment users. In this way, BLM could ensure a cooperative attitude with the users and obtain a long-term commitment from them.

The proposed action of the plan is to implement a grazing management system to improve and maintain the Thorn Creek Riparian Area and accommodate other existing uses. If grazing management does not fully accomplish the planned objectives, then watershed, recreation, wildlife, and range developments

may be needed as facilitating measures. A spring/late summer-fall/modified rest-rotation grazing system is proposed to meet the objectives of this plan. The spring grazing season would begin following spring runoff, as early in the season as possible. A target use period of 31 days would be used with an estimated opening date of May 1. Spring season utilization of herbaceous vegetation should not exceed 60 percent. The late summer-fall season uses a target of 30 days of grazing with an actual opening date 10 days before or after September 1. The late season grazing should not exceed 50 percent herbaceous utilization. When utilization on woody species reaches 10 percent, the livestock operators will be expected to take a more active role to control livestock movement. Management flexibility is designed into the plan to allow synchronization with the existing allotment management plan. Numerous improvements may be done throughout the life of the plan. In the short term, only a minimum number of improvements are planned. The planned improvements are the reconstruction of the PRMA boundary fence (3.7 miles) and the construction of up to six small exclosures for monitoring purposes. All resources will be intensively monitored with the greatest emphasis on range (vegetation) and watershed. The estimated project cost for the first six years of this project is \$30,000 plus the associated costs of three workmonths each year. This plan will be evaluated on the basis of the monitoring data and is planned for revision through the Analysis, Interpretation, and Evaluation (AIE) process after the initial six years. Minor changes in the plan may be done as needed.

Other Riparian Projects

There are a number of other riparian areas being managed in the Shoshone District. Some of these are large (>100 acres) and many are small (<1 acre). It is District policy to fence all spring developments. Many of the reservoirs in the District are also fenced. The attached table (Appendix 1) only lists those reservoirs and spring areas maintained by the 4351 program.

A number of Isolated Tracts have riparian areas that have been fenced. The Isolated Tract Program is aimed primarily at ring-necked pheasants. Ungrazed riparian and wetland areas provide excellent winter habitat for pheasants as well as other wildlife species.

Another riparian enhancement measure in the District involves the use of beaver. In cooperation with several other agencies, we are reintroducing beaver into select drainages where their dam building activity is raising the water table and rehabilitating former riparian and meadow areas.

The District is also cooperating with the U.S. Forest Service and other agencies and private individuals on a major hydrologic and riparian project along the Big Wood River north of Ketchum. The objective of the project is to stabilize the stream channel in key areas which are threatening Highway 75 and private property in the floodplain of the Big Wood River.

SHOSHONE DISTRICT RIPARIAN MANAGEMENT PROJECTS
BENNETT HILLS RESOURCE AREA

SITE	NAME OF PROJECT	JOB NUMBER	INITIATED	SIZE	DRAINAGE	PROBLEMS	GOALS	TREATMENT	RESULTS AND COMMENTS
1	White Arrow Pond Fence	4809	1977	1.5 miles/ 10 acres	Clover Creek	Minor livestock pressure.	Waterfowl and fish habitat.	Fence/island construction	Successful. Maintenance every two years is minimal.
2	Thomas Wildlife Fence	4196	1970	1.5 mile/est. 10 acres	Rattlesnake	Poor maintenance by user group.	Wetland, sage grouse and big game.	Fence	Successful. Reassigned to 4351 program.
3	Bacon Pond Enclosure	4533	1974	1.7 mile/est. 10 acres	Irrigation Runoff	Livestock and leaks in canal.	Upland game and waterfowl.	Fence	Failure. Change in irrigation system.
4	Walker Reservoir	0980	1973	1 mile	King Hill Creek				Successful for waterfowl and fishery.
5	Bull Spring (South of road)	0393 4812	1939 1977	1.5 mile	Black Canyon Creek	Loss of meadow; down cutting.	Watershed, upland game.	Fence	Continued problem. Capped spring development. Re-established spring. Fence project modified two times.
6	Clover Creek Enclosure Fence	5157	1982	12 miles	Clover Creek	Livestock.	Big game winter, waterfowl, upland and non-game.	Fence	Success. Maintain every two years.
7	Grouse Scat Reservoir Fence	3914	1981	1.3 mile		Livestock.	Waterfowl, upland game.	Fence, water right	Success. New grouse lek.
8	Renaklus Fence	3933	1984	1.5 mile	Snake River	Livestock.	Non-game, upland game, waterfowl.	Fence/seed	Partial success. Seeding failed, fence is protecting.
9	Fricke Fence	5137	1981	1.75 mile	Clover Creek	Livestock trespass.	Waterfowl, fish, upland game.	Fence	Partial success. Extreme maintenance, 1987 redesign.
10	Dry Creek Fence	4482	1974	1.3 miles	Dry Creek	Livestock.	Fisheries, beaver, non-game.	Fence	Poor past maintenance. Now on two year maintenance schedule.
11	Clover Creek Fence	5070	1983	12.5 miles	Clover Creek	Livestock.	Protect riparian for watershed.	Fence	Partial success. Ineffective design, modified two times.
12	Haggie Reservoir	0091	1969	1.3 mile fence/10 acre pool	N/A		Provide livestock water outside enclosure, wildlife (waterfowl) inside.	Fence and pool	Success.
13	Summit Reservoir	0085	1942 w/app	12 pits	N/A	No enclosure.	Provide livestock water and wildlife habitat.	Dig pits	Partial success. Provides livestock water and supports sage grouse, elk, mule deer, and goose nest platforms.

SHOSHONE DISTRICT RIPARIAN MANAGEMENT PROJECTS (Cont.)
 BENNETT HILLS RESOURCE AREA (Cont.)

SITE	NAME OF PROJECT	JOB NUMBER	INITIATED	SIZE	DRAINAGE	PROBLEMS	GOALS	TREATMENT	RESULTS AND COMMENTS
14	Schlein Flat	0313	1977	1 mile	Clover Creek	Livestock on braided stream.	Waterfowl, upland, and non-game.	Fence	Success. Very low maintenance needs.
15	Spring Creek Reservoir	0680	1951	.25 mile	Spring Creek	Livestock.	Drift fence to control livestock.	Fence	Success. Has provided shoreline habitat for waterfowl.
16	T J-30 Pond	4981	1981	.25 mile	Irrigation Water	Livestock.	Isolated Tract, waterfowl, upland game, antelope.	Fence/pond improvement	Partial success. Dependent on cooperation of adjacent land owner for water levels.
17	T J-26 Fence	5155	1983	.5 mile	Main Canal	Livestock pressure.	Isolated Tract, waterfowl, upland.	Fence	Success.
18	Camp I Fence/Extension	4690	1975	1.5 miles	Irrigation	Livestock pressure.	Isolated Tract, waterfowl, and upland game.	Fence	Success. Modified in 1987 to protect south boundary.
19	Thorn Creek Pilot Riparian	N/A	1987	6,300 acres	Thorn Creek	Livestock pressure.	Multiple use.	Plan written	Not yet evaluated.
20	Preacher Creek Fence	5389	1987	4.5 miles	Preacher Creek	Watershed, loss of water table.	Reestablish riparian vegetation, regain water table in long term.	Fence	Not yet evaluated.
21	Connet Spring Fence	4681	1961	.5 mile/ 10 acre enclosure	Coyote Creek	Livestock.	Erosion control.	Fence & Gabions	Poor past maintenance. Now on schedule.
22	Ferguson Flat Fence	5246	1984	.5 mile	Cottonwood Creek	Livestock.	Riparian protection for non-game and furbearer.	Fence	Not yet evaluated.
23	Clover Creek Meadow Rest	5138	1982	120 acres	Clover Creek	Livestock.	Restore meadow, upland and big game.	Burn/seed/ temporary fence	Failure. Operator difficulties, seeding being over grazed, use agreement up for renewal.
24	Park Reservoir	N/A	1982	110 acre pond	Irrigation		To stabilize irrigation source for J. Park.	Build dam and fence through R/W process	Success. Excellent waterfowl area.
25	Catchall Fence	5247	1987	.25 mile	Catchall Creek	Livestock.	Livestock control to protect riparian area.	Fence	Not yet evaluated.

SHOSHONE DISTRICT RIPARIAN MANAGEMENT PROJECTS (Cont.)
 BENNETT HILLS RESOURCE AREA (Cont.)

SITE	NAME OF PROJECT	JOB NUMBER	INITIATED	SIZE	DRAINAGE	PROBLEMS	GOALS	TREATMENT	RESULTS AND COMMENTS
26	Rhyolite Spring	5312	1986	.25 mile	Preacher Creek	Livestock.	Provide livestock water, protect remaining spring.	Develop spring, put in trough, fence remaining meadow	Not yet evaluated.
27	Rattler Reservoir Fence	0215	1961	1 acre pool/ 1.5 mi. fence	Pit Reservoir	Livestock.	Provide livestock water by trough and protect pond for wildlife.	Trough/fence	Poor maintenance and cooperation by permittee. Now under 4351 program.
28	Rattlesnake Spring Enclosure	4811	1954	1 mile	Rattlesnake	Livestock.	Provide livestock water outside of spring and meadow.	Trough/fence	Poor design/poor maintenance. Reconstruction in Pilot Riparian Plan.
29	Preacher Creek Spring Enclosure	5293	1986	1.1 mile	Spring	Livestock.	Pipe water to trough, fence developed spring.	Fence	Not yet evaluated.
30	Old Homestead Reservoir Fence	0471	1963	1.5 mile fence/10 acre pool	Schooler Creek	Livestock.	Provide livestock water outside enclosure, wildlife, waterfowl, sage grouse, antelope.	Fence	Poor past maintenance. Reassigned under 4351 program.
31	700 Reservoir Fence	0292	1961	1.75 mile	N/A	Livestock.	Provide water in troughs for livestock, waterfowl habitat in enclosure	Fence	Poor past maintenance. Reassigned under 4351 program.
32	Greenspring Reservoir Fence	0282	1961	1.25 mile	N/A	Livestock distribution.	Provide livestock water outside fence, wildlife habitat inside enclosure.	Fence	Poor past maintenance. Reassigned under 4351 program.
33	Ureybull Spring Reservoir Fence	0285	1961	1.25 mile	N/A	Livestock.	Provide livestock water outside enclosure, wildlife habitat inside.	Fence	Poor past maintenance. Reassigned under 4351 program.
34	Seep Reservoir Fence	1038	1958	1.25 mile	N/A	Livestock.	Provide livestock water outside enclosure in trough, wildlife habitat inside enclosure.	Fence	Poor past maintenance. Reassigned under 4351 program.

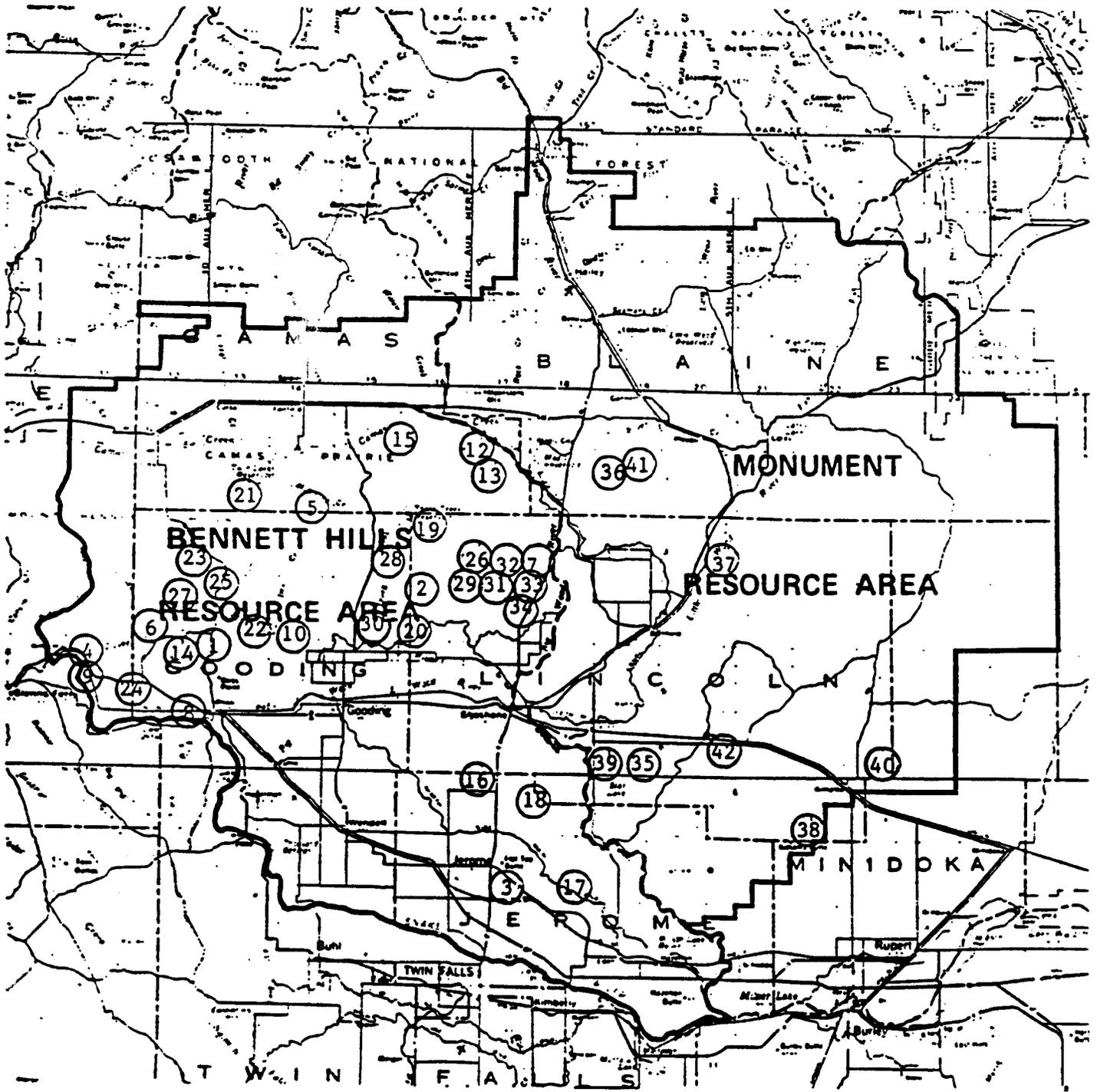
SHOSHONE DISTRICT RIPARIAN MANAGEMENT PROJECTS (Cont.)
MONUMENT RESOURCE AREA

SITE	NAME OF PROJECT	JOB NUMBER	INITIATED	SIZE	DRAINAGE	PROBLEMS	GOALS	TREATMENT	RESULTS AND COMMENTS
35	Star Lake	0143	1953-1980	200 acres	Irrigation Runoff	Livestock; water availability.	Waterfowl resting and nesting; other waterbirds; sage grouse; provide livestock water outside wildlife area.	Fence. No grazing; seeding.	Good. Good cooperation with livestock users.
36	Sonnars Reservoir	0417 4939			Catchment Reservoir	Livestock.	Waterfowl nesting; sage grouse brood rearing.	Fence. Exclude livestock.	Fence removed in 1985. Sheep heavily browsed woody vegetation.
37	Little Wood River	0995 4530 4913 5124	1975-1983	7.7 miles	Little Wood River	Livestock.	Improve woody riparian habitat.	Fence. One section fall graze two out of four years. Tree planting.	Improvement slow, main- tenance problems.
38	IT L-15 Fence	4976	1980	140 acres	Irrigation Runoff	Livestock, agricul- tural trespass.	Improve pheasant winter habitat; waterfowl nesting and resting.	Fence/seeding.	Agricultural trespass stopped.
39	IT L-3 Fence	5049	1982	100 acres	Irrigation Canal	Livestock grazing; lack of woody vegetation.	Improve pheasant winter habitat.	Fence; plant shrubs and trees; exclude livestock.	Poor survival of shrubs and trees. Pheasant winter habitat improved through livestock protection.
40	IT M-11, 12 Fence	5153	1983	1 mile	Natural basin irrigation runoff	Livestock grazing.	Improve waterfowl resting and nesting.	Fence. Exclude livestock.	Fair. Only limited potential for riparian/ wetland improvement.
41	Sagebrush Spring	5353	1986	13 acres	Spring-fenced	Livestock grazing.	Establish riparian vegetation around spring development.	Fence. Exclude livestock.	Not evaluated yet.
42	Shirley G Spring	5354	1986	13 acres	N/A	Livestock grazing.	Protect water source.	Fence. Exclude livestock.	Not evaluated yet.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SHOSHONE DISTRICT

IDAHO



LITTLE WOOD RIVER
LOW-LEVEL COLOR INFRA-RED PHOTOGRAPHY
1981



GRAZED BY
SHEEP ~70 YEARS (1880s-1950s)
CATTLE ~30 YEARS (1950s-1981)



GRAZED BY SHEEP
FOR ~100 YEARS
(1880s-1981)



RESTED FROM LIVESTOCK USE
FOR AT LEAST 15 YEARS

LITTLE WOOD RIVER



LITTLE WOOD RIVER - 1981
AREA FENCED IN 1980



LITTLE WOOD RIVER - 1984
SAME AREA AFTER 3.5 GROWING SEASONS OF REST

THORN CREEK
PILOT RIPARIAN MANAGEMENT AREA



BILL HARRIS AND ROGER ROSENRETER
AT HEAD SPRING OF THORN CREEK.
NOTE STREAMBANK IN BACKGROUND.

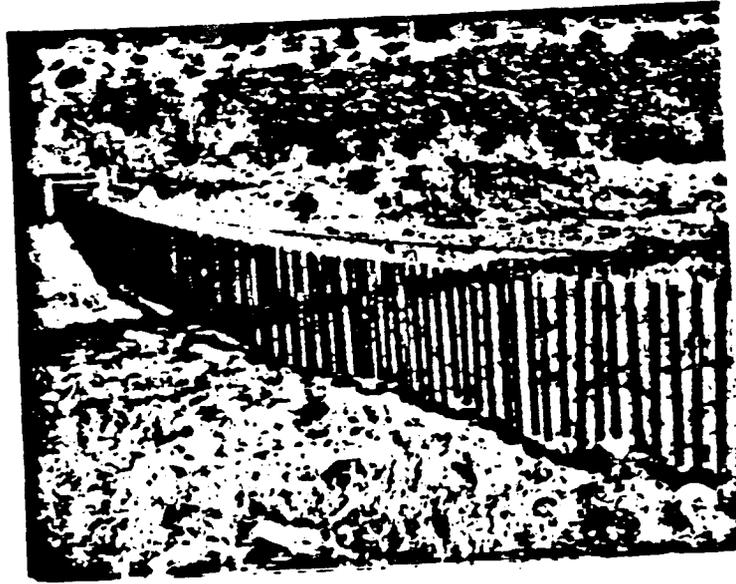


ROGER ROSENRETER SHOWING
WHERE LICHEN GROWTH HAS
STOPPED. THIS CORRESPONDS
TO THE FORMER SOIL LINE
DEMONSTRATING THE LEVEL OF
EROSION



THORN CREEK, SHOSHONE DISTRICT, AUGUST 1987
NOTE VERTICAL STREAMBANK ON STREAM JUST
UPSTREAM OF SMALL RESERVOIR AND LARGE MEADOW

OTHER RIPARIAN AREAS



FRICKE "XYLOPHONE" RIPARIAN FENCE

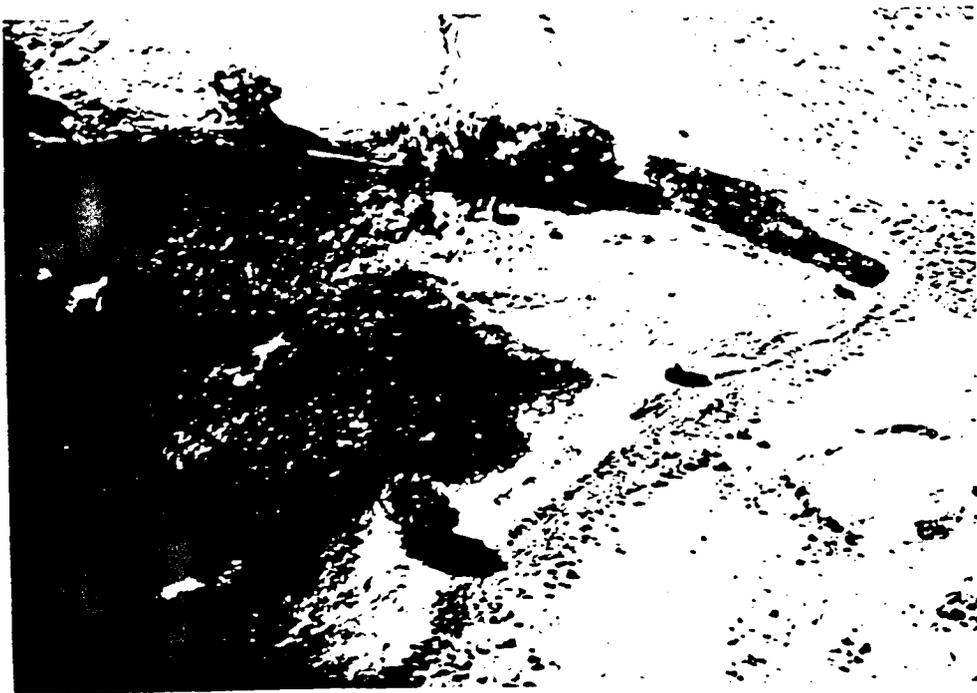


RIPARIAN HABITAT TYPICAL OF AREAS IN THE
UPPER BIG AND LITTLE WOOD RIVER DRAINAGES

STAR LAKE



Shoreline vegetation along Star Lake.



Aerial view of Star Lake riparian vegetation.

Coeur d'Alene District

Riparian Management Program

by

**Craig Johnson
Fisheries Biologist**

**Cottonwood Resource Area
Bureau of Land Management
Route 3, Box 181
Cottonwood, Idaho 83522**

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I. Introduction

Riparian areas are zones of transition from aquatic to terrestrial ecosystems, whose presence is dependent upon surface and/or subsurface water, and which reveal through their existing or potential soil-vegetation complex the influx of water. Because of the relationship of aquatic and riparian habitats, this report will include protection and enhancement efforts for both.

Within the Coeur d'Alene District, 7,000 acres of riparian habitat is associated with approximately 1,500 miles of perennial and intermittent streams crossing BLM lands. Approximately 300 miles of streams and rivers provide habitat for fish. The Cottonwood Resource Area contains 200 miles of streams and rivers that provide habitat for anadromous fish. Approximately 300 acres of riparian habitat is associated with lakes, ponds, wet seeps, marshes, wet meadows, and springs.

Within the district, approximately 3 percent of the BLM lands are classified as riparian. The primary values of riparian areas include 1) fish and wildlife values, 2) environmental quality values, and 3) socio-economic values. Because of the extreme resource values associated with riparian and aquatic habitats, management of such receives special attention in the district.

II. Riparian/Aquatic Land Use Coordination

As can be seen, riparian and aquatic habitats have high resource values associated with them. Therefore, coordination between all land uses is required. The primary district riparian management direction is included in the following documents which are on file at the Coeur d'Alene District office and the Cottonwood Resource Area office.

1. Coeur d'Alene District Management Framework Plans.
2. Coeur d'Alene District Aquatic Habitat Management Plans.
3. BLM North Idaho Timber Management EIS (1981).
4. BLM Northern Idaho Grazing Management EIS (1981).
5. District riparian management guidelines.
6. District fisheries/water quality objectives and sediment budgets.
7. Phase I Mineral Withdrawal, Mouth of Salmon River (RM 0.0) to Hammer Creek (RM 53.0).
8. Phase II Proposed Mineral Withdrawal, Hammer Creek (RM 53.0) to French Creek (RM 101.0).

III. Riparian/Aquatic Protection and Enhancement Projects

The major emphasis for riparian and aquatic protection and enhancement projects is from implementation of habitat management plans (HMPs) and

Sikes Act Cooperative Agreements. Table 1 summarizes completed HMPs and/or plans that have a major emphasis of riparian/aquatic protection, maintenance, and enhancement.

TABLE 1. Coeur d'Alene District's completed plans that were developed specifically for aquatic and riparian habitats.

PLAN NAME	DATE COMPLETED	MILES STREAMS/RIVERS	TOTAL ACREAGE ¹
Elk City Aquatic Zone HMP No. ID-6WHA-10	1982	28.0	683
Lower Salmon River Aquatic Zone III HMP No. ID-6WHA-All	1984	20.0	1,516
Lower Salmon River Aquatic Zone I HMP No. ID-6WHA-A23	1985	63.0	5,637
Lucile Caves HMP No. ID-6WHA-125	1985	0.3	438
Big Elk Creek Pilot Riparian and Aquatic Program	1987	2.2	2,688

¹ Total acreage includes all BLM lands covered by plan of which a large percentage will not be riparian habitats but terrestrial habitats that are essential for proper management and protection of riparian and aquatic habitats.

Following is a brief summary of Coeur d'Alene District riparian and aquatic project work completed to-date. Refer to Figure 1 for a map indicating approximate project location.

A. Project Name: East Fork Pine Creek Stream Rehabilitation

1. Date: Started implementation efforts in 1980.
2. Location: T. 48 N., R. 2 E., Section 34 - Emerald Empire Resource Area
3. Area Description: East Fork of Pine Creek is a third order stream that enters the Coeur d'Alene River near Pinehurst. The project area is an alluvial stream bottom damaged by floods in 1974, 1981, and 1982. Streamside vegetation was destroyed through flooding and stream rechannelization by the Army Corps of Engineers. The result is a cobbly floodplain devoid of plant growth. The elevation is between 2,620 and 2,720 feet. The topography is flat along the floodplain valley. The soil profile has been destroyed except for isolated islands missed by the flood. Only gravel and cobbles remain.
4. Problems: Loss of soil and vegetation cover due to flooding and floodplain disturbances. In addition, removal of debris, stumps, logs, etc. by the Army Corps of Engineers has depleted the potential for stabilizing the stream.
5. Goals and Objectives: To evaluate the feasibility of rehabilitating the disturbed floodplain and speed the natural process of succession and develop a soil binding root mass. Additional benefits include enhancing wildlife habitat and improving visual qualities of the site.
6. Techniques and Treatments: In 1980, approximately 1,500 willow (Salix spp.) cuttings were planted using a YACC crew. The cuttings were collected about one month before planting and treated with root hormones to enhance the possibility of survival.

In April, 1981, one hundred containerized cedar (Thuja plicata) and forty bare-root natural stock were planted in five areas along the channel. In one cluster along the stream, twenty willow and twenty black cottonwood (Populus trichocarpa) were planted in a moist area.

In June, 1982, eight grass test plots were established. These were broadcast seeded with spike bentgrass (Apera interrupta), Whitnor bearded wheatgrass (Agropyron subsecundum), climax timothy (Phleum pratense), redtop (Agrostis alba), Rosana western wheatgrass (Agropyron smithii), and Reed's canary grass (Phalaris arundinacea). Also a standard lawn grass mixture of Kentucky bluegrass (Poa pratensis), red fescue (Festuca rubra), and Chewings fescue (Festuca spp.) was seeded in one area.

7. Results and Comments: The 1980 willow plantings were destroyed when the stream channel shifted location in the winter of 1981.

First year following planting, over 50 percent of the cedar survived especially the ones which were shaded by rocks and debris. The planted trees were difficult to distinguish from natural regeneration because they were not well marked. By the third year only 10-20 percent of the cedar were alive. Again only the sheltered ones made it.

The 1981 willow cuttings were destroyed by flooding and additional stream movement.

The grass seedings were monitored in 1982 and 1983. Surviving grass was small and short even by the end of the second year. Bentgrass survived but was stunted. Wheatgrass did not survive. The lawn mix survived. Timothy survived but was small. Redtop survived and increased in area. Rosana western wheatgrass had low survival. Reed's canary grass was basically just hanging on.

The site is too dry except for possibly redtop. Without additional soil or organic debris build-up, establishing shrubby or coniferous vegetation is limited. Establishing vegetation without site preparation and protective measures from flood forces appears to be questionable. To aid the restabilization of the stream, structural improvements (gabions, riprap, habitat rocks, etc.) will be required.

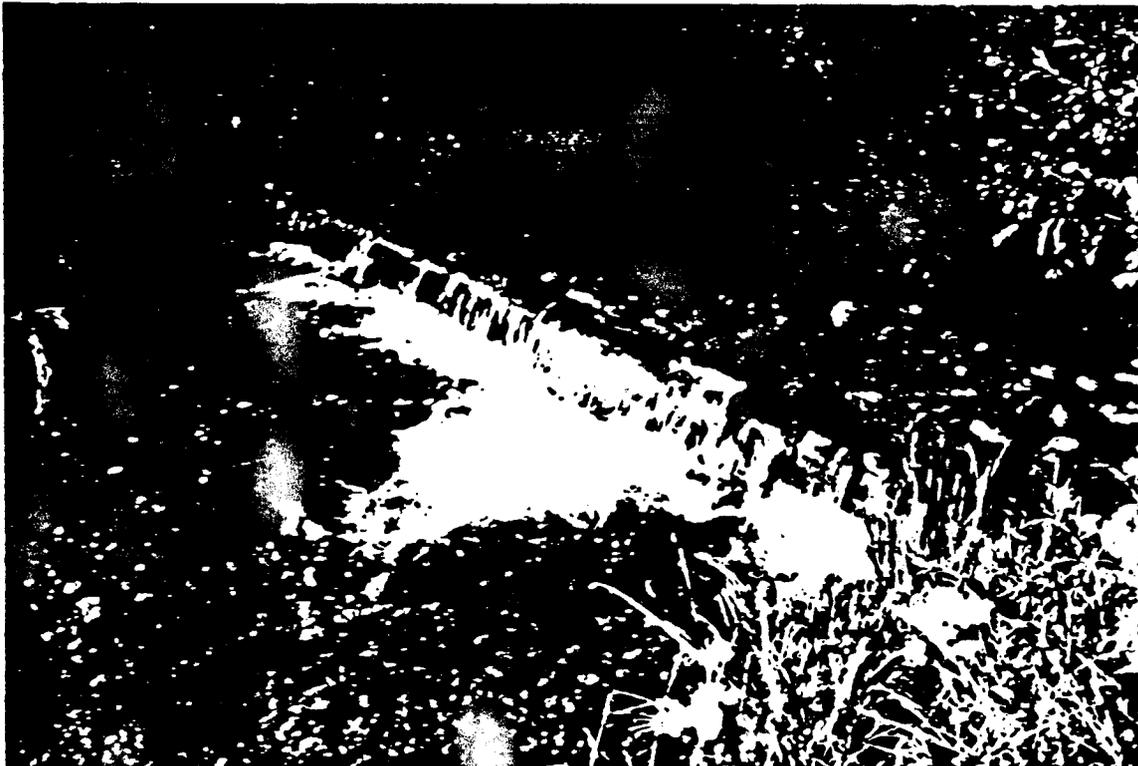
B. Project Name: Elk City Aquatic Zone HMP

1. Date: Started initial implementation efforts in 1982.
2. Location: T. 29 N., R. 8 E. - Cottonwood Resource Area, see Figure 1-B.
3. Area Description: The "Elk City Township" is surrounded by U.S. Forest Service lands, and is approximately 35 air miles east of Grangeville. The Elk City Aquatic Zone is within the South Fork of the Clearwater River drainage and includes 28 miles of rivers and streams crossing BLM lands. Average elevation is 4,000 to 4,200 feet and average precipitation is 30 inches per year. There are a wide variety of soils within the township. Soils along the streambottoms are primarily Jughandle variant silt loam, Typic Xerofluvent, cobbly and Humic Cryaquept. Portions of the streambottoms have been dredged, exposing the coarse, sandy subsurface soils which are mixed with gravel and cobble. The rivers and streams provide habitat for summer steelhead trout and spring chinook salmon. Resident salmonids include rainbow trout, brook trout, mountain whitefish, bull trout, and rainbow x cutthroat trout hybrids. Common riparian vegetation includes Carex spp., Kentucky bluegrass (Poa pratensis), redtop (Agrostis alba), willow (Salix spp.) and alder (Alnus spp.). Upland forest habitat types often are adjacent to some streams, common species include grand fir (Abies grandis), lodgepole pine (Pinus contorta), and Engelmann spruce (Picea engelmannii).
4. Problems: Riparian and aquatic habitats have been degraded to varying degrees by mining, livestock grazing, road construction, and logging. Portions of streams have been severely degraded and altered by dredge mining. Often, these dredge tailing areas are devoid of vegetation.
5. Goals and Objectives: Dependent on specific stream reaches the objectives include 1) improving 14 miles of poor and fair condition riparian areas to good in ten years, 2) improving 14 miles of streams and rivers that have a poor fish habitat suitability to a moderate condition in 10 years, and 3) improving 14 miles of poor and fair streambank stability to good in 10 years.
6. Techniques and Treatments: Actions completed to-date include grazing treatments, riparian fencing, check dam construction, shrub plantings, habitat rock installations, tree cover installations, fish passage barrier removal, and livestock barriers constructed along streambanks.
7. Results and Comments: Instream improvements have resulted in increased fish densities within treated reaches. All streambank and riparian treatments and improvements have improved overall condition.

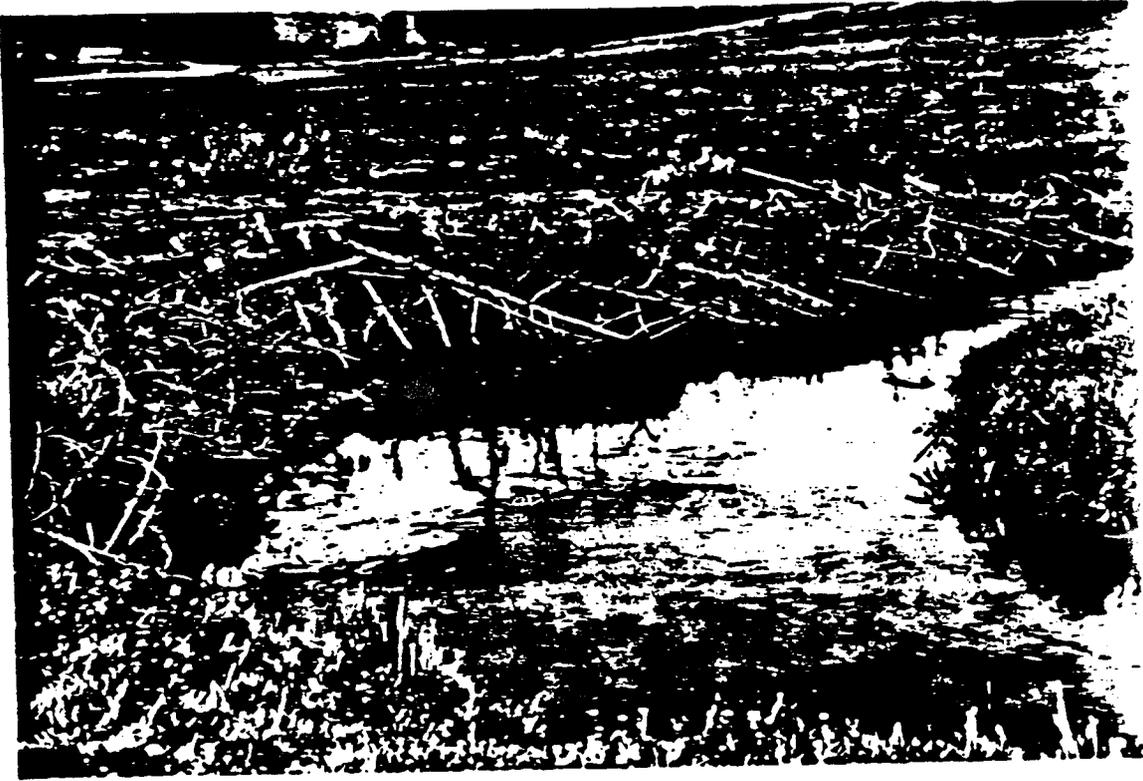
Tree revetment has proven to be very beneficial at aiding the stabilization of streambanks. Primary benefits from riparian fencing have been associated with significant increases in streambank cover. Tree cover installations have proven to be a very cost effective means for improving instream cover for fish. Check dam installations are providing the only good quality pools within selected reaches, however periodic maintenance will be required.



Habitat rocks are installed on American River to improve instream cover. This stream has been historically dredge mined in the past.



Check dams were installed on the East Fork of American River. This stream has no vehicle access to it, all instream work was done with hand tools, chainsaws, and gasoline powered winches.



Tree revetment has significantly reduced eroding banks on Big Elk Creek.



Willow planting has increased streambank shrub cover on Big Elk Creek.



Check dams are installed on American River to provide good quality pools and instream cover for fish. The tail ends of the pools provide good spawning gravels. Note the tree revetment structure on the eroding streambanks.

C. Project Name: Big Elk Creek Grazing Study

1. Date: Implemented in 1983.
2. Location: T. 29 N., R. 8 E., Section 23 - Cottonwood Resource Area, see Figure 1-C.
3. Area Description: The project area includes approximately 0.3 mile of Big Elk Creek. Big Elk Creek is a fourth order stream located in the headwater area of the South Fork of the Clearwater River in the vicinity of Elk City. Big Elk Creek meanders through a very large meadow. Season long cattle and horse grazing occurs along the creek. Elevation is 3,960 feet and average annual precipitation is 30 inches. Common vegetation includes Kentucky bluegrass (Poa pratensis), Carex spp., Salix spp., and redtop (Agrostis alba). Soils within the meadow area are Jughandle variant silt loam. Big Elk Creek provides habitat for spring chinook, summer steelhead trout, rainbow trout, cutthroat trout, brook trout, mountain whitefish and bull trout.
4. Problems: Heavy season long livestock grazing and trampling has resulted in severe streambank degradation.
5. Goals and Objectives: Determine aquatic and riparian response from complete protection from livestock grazing. Determine riparian grazing strategies.
6. Techniques and Treatments: Approximately 0.3 mile (6 acres) of Big Elk Creek was fenced to exclude livestock grazing in 1983. Tree revetment and willow plantings were initiated inside and outside (control) the enclosure. A detailed monitoring plan was initiated to determine instream cover, stream channel, vegetation, and fish density responses. Also included in the study area is a big game enclosure that was constructed in 1964.
7. Results and Comments: To-date, significant increases in Salix spp., and fish density were noted within the protected area. No significant channel changes have been noted. Monitoring of the big game enclosure by Leege et al. (1981) found that bare ground and moss were significantly greater outside the enclosure than inside. Litter was more abundant inside and herbaceous ground cover was about the same inside and out. Species which occurred more frequently outside the enclosure and therefore favored by grazing included: redtop, tufted hairgrass (Deschampsia caespitosa), bulrush (Scirpus microcarpus), timothy (Phleum pratense), and clover (Trifolium spp.). Sedges (Carex spp.) were more common where protected from grazing. Herbage production inside vs. outside the enclosure was not significantly different.



Degradation of Big Elk Creek with season-long grazing. Note the big game enclosure (upper left) which was constructed in 1964.



Big Elk Creek after 3 years of protection from season-long livestock grazing.

D. Project Name: Spring Development

- 1. Date: N/A**
- 2. Location: Cottonwood Resource Area, throughout Resource Area.**
- 3. Area Description: Spring sources and water collection facilities, approximately 20.**
- 4. Problems: Cattle were allowed access to spring sites and collection facilities reduced the effectiveness of such. Wet seep areas and associated riparian vegetation were degraded from concentrated livestock use.**
- 5. Goals and Objectives: Reduce livestock damage to spring sites and restore riparian vegetation.**
- 6. Techniques and Treatments: Exclosures were constructed around spring sources to eliminate livestock use.**
- 7. Results and Comments: Exclusion of livestock resulted in significant improvement of riparian vegetation and improved livestock water sources.**

E. Project Name: Lone Pine Bar Site Stabilization Plan

1. Date: Implemented 1985
2. Location: T. 30 N., R. 1 E., Section 32 - Cottonwood Resource Area, see Figure 1-E.
3. Area Description: The project area is located on a small river terrace adjacent to the Salmon River. Vegetation consists of ponderosa pine (Pinus ponderosa), hackberry (Celtis occidentalis), Douglas hawthorn (Crataegus douglasii), poison ivy (Rhus radicans), streambank wheatgrass (Agropyron riparium) and other grasses. Elevation is 1,340 feet and average annual precipitation is 17 inches. Soils are primarily sandy loam. The river terrace area is the location of a valuable cultural site that is possibly 3,000 years old.
4. Problems: Salmon River high flows were eroding the river terrace area, along with the cultural site. Some cattle damage to the site was also occurring. A valuable cultural site was being lost with the erosion of the river banks. Salvage excavation of the cultural site would probably cost in excess of \$100,000. Also, excavation would remove the scientific information which is inconsistent with the associated land use plan. Overall, approximately 150 feet of riverbank was significantly eroding away.
5. Goals and Objectives: The objectives of the stabilization plan were to prevent further erosion and livestock damage to the riverbank and stop further degradation of a valuable cultural site.
6. Techniques and Treatments: A major problem with stabilization of the area was that no road access occurred to the site. A log revetment method of erosion control was used along with fencing and seeding. The logs were transported to the site across the river from the county road. A 5/8-inch cable, attached to a winch on a caterpillar tractor, was suspended a distance of about 600 feet from the north side of the river across to the south side. About 50 logs (16 feet long and with a diameter of 12 inches) were cabled to the toeslope of the eroding bank. Cut shrubs and trees were also wired to the logs. The river terrace and bank were fenced to exclude cattle use. The area was also seeded with streambank wheatgrass.
7. Results and Comments: Success has been excellent. Erosion of the river terrace has been curtailed. The log and shrub revetment has significantly reduced the water velocity against the bank.



During the spring of 1985, log revetment, livestock exclosure, and seeding were used to stabilize an eroding bank along the Salmon River to protect a cultural site. High spring river flows were eroding the riverbank.

F. Project Name: Gold Center Creek Exclosure

1. Date: Started implementation 1986
2. Location: T. 42 N., R. 2 E., Section 1 - Emerald Empire Resource Area, see Figure 1-F.
3. Area Description: Gold Center Creek is a fourth order stream that confluents with the Middle Fork of St. Maries River about 6 miles upstream from Clarkia. The project area includes a meandering alluvial stream channel flowing through a stringer meadow. Elevation is 3,160 feet and average precipitation is 33 inches per year. Gold Center Creek provides habitat for cutthroat trout.
4. Problems: Excessive summer cattle grazing and trampling has resulted in streambank degradation and poor streambank vegetation cover.
5. Goals and Objectives: The goals of the enhancement project are to provide a study area to determine streambank and channel recovery from livestock exclusion and shrub plantings.
6. Techniques and Treatments: A three acre exclosure, consisting of a three-strand barbed wire fence was constructed in November, 1986. Approximately 0.2 mile of creek occurs within the exclosure area. Shrub species planted by the Soil Conservation Service on May 5, 1985, include 100 coyote willow (Salix exigua); 100 sitka willow (Salix sitchensis); 100 Scouler willow (Salix scouleriana); 100 erect willow (Salix rigida); 200 Douglas spiraea (Spiraea douglasii) and 200 redosier dogwood (Cornus stolonifera).
7. Results and Comments: Improvement of streambank condition and vegetation is expected. Due to the small size of the exclosure minimum stream channel improvement is expected. It is too soon to assess recovery results as of this date. Cooperative BLM and SCS monitoring is taking place in the study area.

G. Project Name: Lucile Caves HMP

1. Date: Started implementation in 1987.
2. Location: T. 28 N., R. 1 E., Section 11 - Cottonwood Resource Area, see Figure 1-G.
3. Area Description: The Lucile Caves, spring, and riparian habitat is located approximately nine miles north of Riggins, on the east side of the Salmon River. The Lucile Caves area provides a unique example of a wet limestone cave environment along with associated vegetation and vegetative communities of the Lower Salmon River drainage. The area also contains several State rare plant species and a federal candidate plant species. The Lucile Caves area represents an aquatic calcareous habitat and the floristic and geological components are unique on a regional basis. The riparian habitat is associated with a spring, associated creek, waterfalls, and cave.

Botanical values associated with the area are keyed to the aquatic calcareous habitat, which include: giant helleborine (Epipactus gigantea) which is on the State threatened list; bog violet (Viola nephrophylla) which is on the State watch list; and Fontinalis sp. a moss, Buellia epigaea a lichen, and Chara sp. an algae, which are edaphic calcareous plant species. Other plants of concern occurring in the general area also include Rollins lomatium (Lomatium rollinsi) a federal candidate species. There are scattered small-leaved brickellia (Brickellia microphylla), which is a disjunct at its northern limits. Elevations range from 1,720 to 2,120 feet. Average precipitation is 17 inches.

4. Problems: Present land uses of the general area include cattle grazing, mining, and recreation. Degradation to riparian habitat values have been attributed to cattle grazing. Also, a potential threat exists from mining and consumptive water use of the Lucile Springs.
5. Goals and Objectives: Improve riparian habitat conditions from poor to good within ten years. Maintain and provide existing natural instream flows from the Lucile Caves spring to maintain the existing riparian and aquatic calcareous habitat.
6. Techniques and Treatments: The Lucile Caves HMP was completed in 1985 (No. ID-6WHA-T25). This plan identified planned actions for the 438 acre area, with primary actions keyed to the riparian habitat within the area. Primary actions include construction of a 15-acre enclosure (constructed 1987) to protect the fragile habitat. Also, approximately 1.5 miles of drift fence and boundary fence were constructed during 1987 to allow for total control of cattle use in the area. A mineral withdrawal has been proposed for the area along with ACEC/RNA designation. Application for non-consumptive water rights is planned.

7. Results and Comments: Significant improvement of riparian habitat is expected. It is too soon to assess recovery results as of this date. A detailed monitoring plan has been implemented.



The Lucile Caves area provides an unique riparian habitat and is proposed for RNA/ACEC designation.

H. Project Name: Big Elk Creek Pilot Riparian and Aquatic Management Program

1. Date: Started implementation 1987
2. Location: T. 29 N., R. 8 E., Sections 4, 5, 6, 7, 8, 9, 16, 17 and 18 - Cottonwood Resource Area, see Figure 1-H.
3. Area Description: The project area includes 2.2 miles of Big Elk Creek, which is within the Buffalo Gulch Allotment area (4,681 acres). Big Elk Creek, a fourth order stream, is located in the headwater area of the South Fork of the Clearwater River in the vicinity of Elk City. Big Elk Creek meanders through a stringer meadow, which is 50 to 300 yards wide. Elevation is 4,200 feet and average precipitation is 30 inches per year. Average stream gradient is 0.5 to 1.5 percent. Common streambank/riparian vegetation includes Carex spp., Kentucky bluegrass (Poa pratensis), redbud (Agrostis alba), alder (Alnus sp.), redbud dogwood (Cornus stolonifera), and willow (Salix spp.). In some areas forest habitat types are adjacent to the creek. Common tree species include Englemann spruce (Picea engelmannii), grand fir (Abies grandis) and lodgepole pine (Pinus contorta). The soil at this site is a poorly drained to somewhat poorly drain, very deep Humic Cryaquept. The surface soil texture is a silt loam, and subsoil is a sandy loam, loamy sand, and gravelly sand. Big Elk Creek provides habitat for summer steelhead trout and spring chinook salmon.

Resident salmonids found in Big Elk Creek include cutthroat trout, rainbow trout, brook trout, mountain whitefish, and rainbow x cutthroat trout hybrids.

4. Problems: Localized areas of excessive summer cattle grazing and trampling has resulted in streambank degradation and lack of streamside vegetation cover. This problem is compounded by the nature of a stringer meadow with good forage, and lack of good forage in dense upland forest habitat types, which concentrates cattle along the streambottom.
5. Goals and Objectives: Dependent on stream reach the objectives for the area include reduction of eroding banks by 50 to 67 percent, increase streambank shrub cover by 200 percent, and increase instream cover by 67 to 100 percent.
6. Techniques and Treatments: A riparian grazing treatment was developed and implemented, which includes season-long rest, early grazing, late grazing (dormant). Utilization of key forage species will not exceed 50 percent. Other actions include tree revegetation of eroding banks, check dam construction, livestock barriers, stock trail construction, drift fences, and riparian enclosure.

7. Results and Comments: Improvement of streambank condition and vegetation is expected. The plan has been partially implemented to-date and should be fully implemented during 1988. It is too soon to assess recovery results as of this date. A detailed monitoring plan has been implemented.



Big Elk Creek has received heavy summer concentrated cattle grazing.



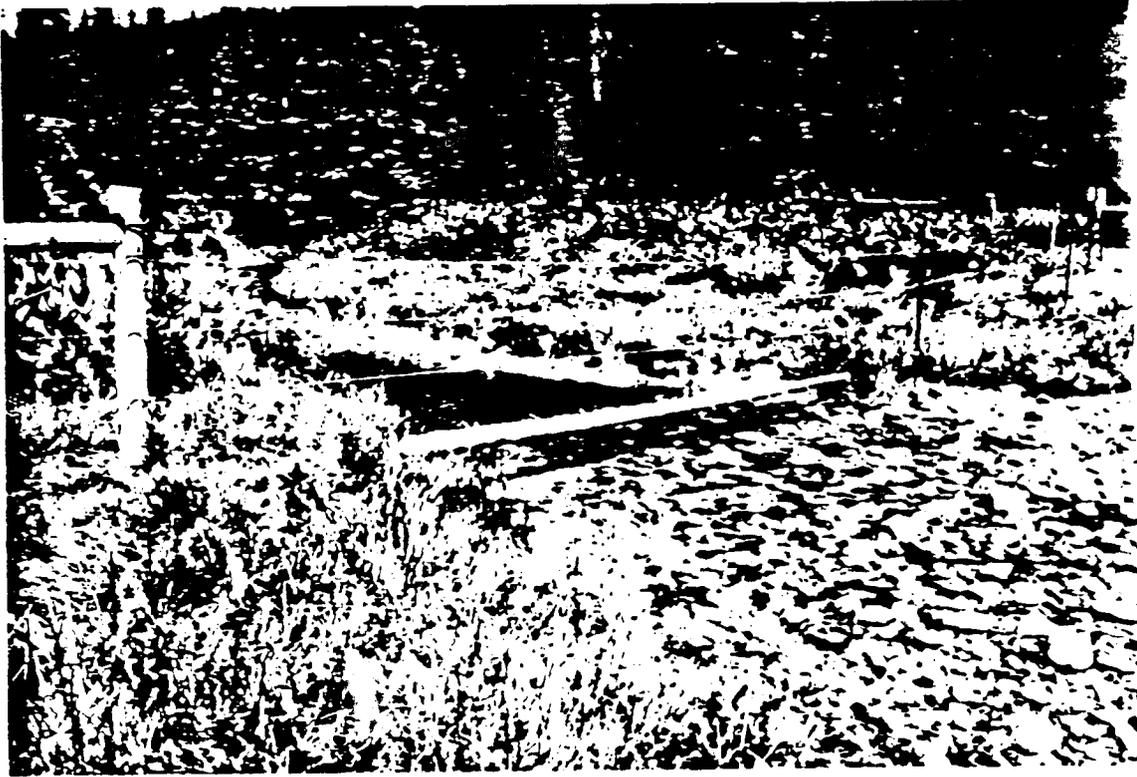
Narrow stringer meadows concentrate cattle adjacent to Big Elk Creek.



Tree revetment was installed along eroding streambanks of Big Elk Creek.



Check dams were installed to improve instream cover.



A portion of Big Elk Creek and riparian area was fenced for monitoring purposes.

I. Miscellaneous Projects

Other projects initiated within the district have indirect impacts on riparian/aquatic management and include:

1. Goose nesting and waterfowl HMPs. Riparian management for waterfowl production.
2. John Day Slump Rehabilitation. Rehabilitation of a slump area, spring, and slide that reached John Day Creek.
3. Instream flow studies. Provides data for water right filings for non-consumptive water use.

IV. Planned Riparian/Aquatic Protection and Enhancement Projects

Planned riparian/aquatic protection and enhancement projects are dependent on future manpower and funding allocations. A large majority of the planned actions in completed HMPs and other plans have not been implemented because of funding constraints. The draft Anadromous Fish Habitat Management on Public Lands, A Strategy for the Future (1987) outlines a total anadromous plan for the BLM. Many identified actions within the plan are for the Coeur d'Alene District.

The BLM, Coeur d'Alene District, has an approved amendment application to the Northwest Power Planning Council for riparian and aquatic enhancement efforts on American River and tributaries (\$431,000).

Upon completion of feasibility and design studies, the following enhancement efforts will be initiated.

1. Development of off-channel rearing habitat. Water will be diverted from main stream channel to provide off-channel rearing habitat for anadromous fish on the South Fork of the Clearwater River.
2. Aquatic and riparian enhancement efforts for flood damaged and dewatered segments of Big Canyon Creek.
3. Enhancement efforts for spawning gravel catchment structures on steep gradient streams.
4. Rehabilitation of dredge mined streambottoms in the Elk City area.

Following are aquatic habitat management plans that will be prepared for the Coeur d'Alene District.

Cottonwood Resource Area

Snake River Aquatic Zone
Lower Salmon River Aquatic Zone II
Little Salmon River Aquatic Zone
Marshall Mountain Aquatic Zone
Clearwater River Aquatic Zone
Big Canyon Creek Aquatic Zone
Lolo Creek Aquatic Zone

Emerald Empire Resource Area

Coeur d'Alene River Aquatic Zone
St. Joe River Aquatic Zone
Little North Fork of the Clearwater River Aquatic Zone

V. Riparian/Aquatic Monitoring and Studies

A. Riparian and Aquatic Studies

Within the Coeur d'Alene District several long-term detailed studies have been initiated to assess the impacts to riparian and

aquatic habitat types from various land uses. Following is a summary of these studies.

1. Elk Creek Hydroelectric Development Study

Purpose of the study is to assess the long-term impacts of hydroelectric development on riparian and aquatic habitat. The hydroelectric project went on-line during April of 1986. Elk Creek is a fourth order stream and conflues with the Little Salmon River at river mile 16.6. Elk Creek is a steep gradient stream (10 to 15 percent) which provides habitat for rainbow trout. A full passage barrier for anadromous fish occurs at stream mile 0.1.

2. John Day Creek Hydroelectric Development Study

Purpose of the study is to assess the long-term impacts of hydroelectric development on aquatic and riparian habitats. The hydroelectric project went on-line during August of 1987. John Day Creek is a fourth order stream and conflues with the Salmon River at river mile 72.4. John Day Creek provides habitat for steelhead trout, chinook salmon, rainbow trout and cutthroat trout. Average stream gradient is 5 to 10 percent.

3. Lower Big Elk Creek Grazing Study

Long-term study on riparian grazing (see Section III-C).

4. Big Elk Creek Pilot Riparian and Aquatic Management Program

Long-term study on riparian grazing (see Section III-H).

5. Gold Center Creek Grazing Study

Long-term study on riparian grazing (see Section III-F).

B. Riparian and Aquatic Inventories and Monitoring

Following is a summary of aquatic and riparian inventories and monitoring which has been initiated in the district.

1. Fish habitat suitability studies
2. Streambank stability inventories
3. Water quality and discharge stations
4. Macroinvertebrate studies
5. Core sampling
6. Embeddedness measurements
7. Fish production studies
8. Instream flow studies
9. Stream channel characterizations
10. Riparian and vegetation monitoring
11. Channel profiles and permanent stream transects
12. Riparian inventories

REFERENCES

Leege, T.A., D.J. Herman, and B. Zamora. 1981. Effects of cattle grazing on mountain meadows in Idaho. *J. Range Management.* 34: 324-328.

TECHNOLOGY TRANSFER

**RIPARIAN PUBLICATIONS
RIPARIAN PRESENTATIONS
RIPARIAN TOURS
RIPARIAN WORKSHOPS/TRAINING
OTHER**

RIPARIAN PUBLICATIONS

- Bohn, C., and K. Gebhardt. 1987. Mechanisms of streambank erosion. In: Range Management Symposium, Society of Range Management. Boise, Idaho.
- Gebhardt, Karl. 1985. Modeling in watershed planning. In: ASCF Watershed Management Symposium. Denver, Colorado.
- Gebhardt, Karl. 1985. Hydrologic properties of soils. BLM Technical Note, Denver Service Center, BLM. Denver, Colorado.
- Gebhardt, Karl. 1986,1987. In: Don Chapman (ed), Riparian short course notes. Chapters on Hydrology; Geomorphology; Erosion; Management of Erosion and Streambank Stability; and Riparian ecosystem rehabilitation. Don Chapman Associates. Boise, Idaho.
- Gebhardt, Karl. 1987. Development of a monitoring program for natural resources management. ISO BLM Manual 4421. Idaho State Office, BLM. Boise, Idaho.
- Gebhardt, Karl. In Preparation. Concepts in riparian hydrology.
- Jackson, W.L., K. Gebhardt, and S. Hudson. 1987. Considerations in rangeland watershed monitoring. BLM Technical Note 369. Denver Service Center, BLM. Denver, Colorado.
- Platts, W. S., W. F. Megahan, and G. W. Minshall. 1983. Methods for evaluating stream, riparian, and biotic conditions. General Technical Report INT-138, Forest Service. Ogden, Utah. (financial and editorial support)
- Platts, W. S., K. A. Gebhardt, and W. L. Jackson. 1985. The effects of large storm events of basin-range riparian stream habitats. North American Riparian Conference, Tucson, Arizona, April 16-18. General Technical Report RM-120, Ft. Collins, CO.
- Platts, W. S. and 12 others. 1987. Methods for evaluating riparian habitats with application to management. General Technical Report INT-221, Ogden, Utah. (financial and editorial support)
- Thomas, Allan E. 1986. Seen a riparian area lately? Good ones are green! Inside Idaho, Idaho State Office, Bureau of Land Management (April 1986), Boise, Idaho. p. 8-9.
- Thomas, Allan E. 1986. Riparian protection/enhancement in Idaho. Rangelands (October 1986). p. 224-227.
- Thomas, A. E., and C. Wentzell. 1986. A bibliography of riparian topics with emphasis on the Intermountain West. Technical Bulletin 86-4 (September), Idaho State Office, Bureau of Land Management, Boise, Idaho. 73 p.

Thomas, Allan E. 1987. Idaho BLM's pilot riparian program. Annual Meeting, Idaho Chapter, American Fisheries Society, (March 12-14), Boise, Idaho. (Abstract only)

Thomas, Allan E. Under Review. Extensive riparian inventories. In: Handbook, Inventories, Monitoring Techniques, and Management Options for BLM Riparian Areas. BLM Riparian Taskforce, 1985-1987. Denver Service Center, Denver, Colorado.

Thomas, Allan E. In Preparation. Riparian areas as wildlife habitat: past, present, and future. Idaho Chapter, The Wildlife Society, Boise, Idaho. (Abstract only)

Thomas, Allan E. In Preparation. Riparian area management by the BLM in Idaho. High Country News, Spring 1988.

RIPARIAN PRESENTATIONS

IDAHO STATE OFFICE

Ellis, Steve

- June 22-25, 1987. Soil considerations in riparian systems. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80+ participants)

Gebhardt, Karl A.

- March 1986. Hydrology and geomorphology of riparian systems. Utah Division of Wildlife. Salt Lake City, UT. (70 participants)

- March 6, 1986. Non-point pollution; session on livestock-fisheries interaction. Idaho Chapter, American Fisheries Society. Boise, ID. (100 participants)

- March 1986. Groundwater hydrology in riparian zones. Eugene, OR. (60 participants).

- December 1986. Hydrology and geomorphology of riparian systems. Riparian Short Course. Boise, ID. (108 participants)

- May 1986. Riparian classification. Society of Wetland Scientists. Seattle, WA. (40 participants)

- June 22-25, 1987. Various hydrology and geomorphology topics. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80+ participants)

- October 1987. Riparian management and hydrology. Workshop, Idaho Department of Lands. Boise, ID. (35 participants)

- December 1987. Hydrology and geomorphology of riparian systems. Riparian Short Course. Boise, ID. (108 participants)

- January 1988. Non-point pollution and riparian management. Executive Management Seminar, Lewis and Clark College. Boise, ID. (est. 35 participants)

Thomas, Allan E.

- March 7, 1985. Idaho BLM riparian improvement projects. Joint Meeting, Idaho Chapters, American Fisheries Society and The Wildlife Society. (Special Riparian Session) Boise, ID. (125 participants)

(Thomas - continued)

- July 1-2, 1985. Coordinator, Riparian issue meeting for Idaho BLM managers and program leaders in range, watershed, and wildlife. Boise, ID. (est. 70 participants)
- December 6, 1985. Protection/enhancement of riparian areas. Idaho Wildlife Federation, Annual Meeting. Boise, ID. (est. 75 participants)
- December 9-12, 1985. Overview and review of Idaho riparian projects. Idaho Riparian Workshop (also one of workshop moderators). Boise, ID. (70 participants)
- March 6, 1986. Grazing impacts as a non-point source: in session on impacts on fisheries and water quality. Annual Meeting, Idaho Chapter, American Fisheries Society. Boise, ID. (100 participants)
- January 15, 1987. Idaho BLM riparian protection/enhancement projects. Wetland/Riparian Interagency Seminar Series. Boise, ID. (45 participants)
- February 17, 1987. Maintenance of water developments, shrub restoration program, and riparian protection/enhancement program in Idaho. Oregon BLM Wildlife, Fisheries, and Botanical Program Coordination Meeting. Redmond, OR. (50 participants)
- March 14, 1987. Idaho BLM's pilot riparian program. Annual Meeting, Idaho Chapter, American Fisheries Society. Boise, ID. (75 participants)
- May 19, 1987. Overview of Idaho's riparian program. Riparian Management Workshop. Prinneville, OR. (35 participants)
- June 22-25, 1987. Riparian and the Clean Water Act; Wildlife habitat and riparian/wetland systems; and Stream improvements and structures. (plus moderator of June 25 session) BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80+ participants)
- August 4, 1987. Overview of BLM's wildlife, fisheries, riparian, and threatened and endangered (T/E) species programs. Wildlife Bureau Summer Meeting, Idaho Department of Fish and Game. Sun Valley, ID. (50 participants)
- September 17, 1987. BLM's riparian program. Idaho Chapter, Soil Conservation Society of America. Boise, ID. (20 participants)
- December 19, 1987. Idaho BLM's wildlife, fisheries, T/E, and riparian programs. Methodist Men's Group. Meridian, ID. (20 participants)

(Thomas - continued)

- January 27, 1988. Overview of BLM's protection/enhancement projects in Idaho. Idaho Riparian Workshop, University of Idaho. Moscow, ID. (est. 100 participants)
- February 26-27, 1988. Riparian areas as wildlife habitat: past, present, and future. Annual Meeting, Idaho Chapter, The Wildlife Society. Boise, ID. (est. 100 participants)

BOISE DISTRICT OFFICE

Clark, James

- October 15, 1987. Before and after information on the Dive Creek riparian project and description of the East Fork of the Bruneau River riparian exclosure project. Boise District Advisory Board Meeting on B100 riparian projects. Boise, ID. (30 participants)
- January 1988. The above presentations will be given for the "71" Association Meeting. Three Creeks, ID. (est. 50 participants)

Mathis, Mike

- October 27, 1986. The Boise District/ Idaho pilot riparian program. Boise District Advisory Council. Boise, ID. (est. 30 participants)
- January 15, 1987. Boise District pilot riparian project. Dwyhee County Commissioners. Murphy, ID. (est. 20 participants)
- February 17, 1987. Boise District pilot riparian project. DRV Planning Committee. Boise, ID. (est. 20 participants)
- May 11, 1987. Rabbit Creek Pilot Riparian Project. Idaho BLM Wildlife Workshop. Boise, ID. (20 participants)
- May 19, 1987. Rabbit Creek Pilot Riparian Project. Riparian Management Workshop. Prineville, OR. (35 participants)
- June 25, 1987. Rabbit Creek Pilot Riparian Project. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80 participants)
- October 15, 1987. Update, Rabbit Creek Pilot Riparian Project. Boise District Grazing Advisory Board. Boise, ID. (est. 30 participants)

(Boise District - continued)

Olmstead, Pat

- July 1986. Overview of Boise District riparian program. Boise District Grazing Advisory Council. Boise, ID. (est. 30 participants)
- October 15, 1987. Overview of Boise District riparian program. Boise District Grazing Advisory Board. Boise, ID. (est. 30 participants)

BURLEY DISTRICT OFFICE

Koch, Kirk

- 1987. Presented Wayne Elmore video and discussed riparian values to 10 grazing associations. Burley, ID. (est. 100 participants)
- 1987. Riparian values as part of watershed presentations given to Cassia County 6th graders. Burley, ID. (600 participants)
- 1987. Shoshone Creek Pilot Riparian Project and Elmore video. Burley District Grazing Advisory Board. Burley, ID. (est. 30 participants)
- June 25, 1987. Shoshone Creek Pilot Riparian Project. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80 participants)

IDAHO FALLS DISTRICT OFFICE

Bozorth, Tim

- November 18-19, 1986. Ongoing riparian research and studies in the Idaho Falls District, Idaho. Riparian Coordination and Research Planning Meeting. Reno, NV. (est. 40 participants)
- May 19, 1987. Importance of water conservation and riparian habitat. First Grade of Longfellow School. Idaho Falls, ID. (25 participants)

(Bozorth - continued)

- June 25, 1987. Sawmill Creek Pilot Riparian Project. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80 participants)
- November 19, 1987. Impacts to riparian areas from hydropower development. Snake River Chapter, the Audubon Society. Idaho Falls, ID. (20 participants)
- December 2, 1987. Hydropower and grazing impacts on riparian areas. Idaho Falls Alpine Club. Idaho Falls, ID. (20 participants)
- January 27, 1988. Riparian management on BLM lands on the Little Lost River drainage, Idaho. (with Glenn DeVoe) Idaho Riparian Workshop, University of Idaho. Moscow, ID. (est. 100 participants)

SALMON DISTRICT OFFICE

Lewis, Lyle

- 1987. Various presentations on Salmon District riparian program, usually in connection with a tour of the projects. Groups included Shoshone-Bannock Tribe; Challis Experimental Stewardship Group; Lemi Soil Conservation Districts, and IDFG biologists. Salmon, ID. (est. 245 participants)
- June 25, 1987. Warm Springs Pilot Riparian Project. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80 participants)

SHOSHONE DISTRICT OFFICE

Langenstein, Steve

- February 20-21, 1987. Protection of riparian areas, the Shoshone sculpin, and three sensitive mollusks in Box Canyon. Annual Meeting, Idaho Chapter, The Wildlife Society. Boise, ID. (est. 80 participants)
- June 25, 1987. Thorn Creek Pilot Riparian Project. BLM Riparian Area Ecology and Management Workshop. Idaho Falls, ID. (80 participants)

COEUR d'ALENE DISTRICT OFFICE

Brown, Lew

- January 27, 1988. Riparian management in the BLM's Coeur d'Alene District: an overview. Idaho Riparian Workshop, University of Idaho. Moscow, ID. (est. 100 participants)

Johnson, Craig

- 1986 and 1987. Aquatic/riparian presentations. Prairie High School. Cottonwood, ID. (est. 35 participants per talk)

- January 1988. Coeur d'Alene District anadromous fish habitat. Presentation to Coeur d'Alene District personnel. Coeur d'Alene, ID. (est. 25 participants)

- January 27, 1988. Small hydro projects in riparian zones. Idaho Riparian Workshop, University of Idaho. Moscow, ID. (est. 100 participants)

RIPARIAN TOURS

IDAHO STATE OFFICE

- September 16-17, 1985. Riparian/watershed projects at Saval Ranch, Elko District, Nevada. Led by Karl Gebhardt for ISO and WO personnel. (6 participants)
- July 17, 1986. South Fork of the Salmon River, tour of USFS riparian research projects (Bill Platts), with Platts and Dr. Paul Turner, NMSU. (3 participants)

BOISE DISTRICT

- July 2, 1985. Dive Creek, Jarbidge Resource Area. Field trip after riparian issue meeting, led by ISO and Jarbidge RA for statewide BLM managers and specialists in fish/wildlife, range, and watershed. (est. 65 participants)
- August 1985. Juniper Creek and Owyhee County riparian areas. Summer Coordination Field Trip, BLM and Idaho Dept. of Fish and Game, sponsored by ISO and Owyhee Resource Area. (est. 45 participants)
- June 1986. Owyhee County riparian areas for Idaho Wildlife Federation, by District and Owyhee RA personnel. (est. 25 participants).
- July 1986. Rabbit Creek and adjacent riparian areas, Owyhee County, for the Boise District Grazing Advisory Council, by District and Owyhee RA personnel. (est. 20 participants)
- August 20, 1986. Riparian tour of Rabbit Creek and adjacent drainages for ISO and Idaho Soil Conservation Commission personnel, by District and Owyhee RA personnel. (8 participants)
- January 30, 1987. Rabbit Creek Pilot Riparian Project, tour for ISO specialists by Owyhee RA and District personnel. (9 participants)
- February 4, 1987. Rabbit Creek Pilot Riparian Project, tour for USFS Intermountain Station research staff, by Owyhee RA personnel. (7 participants)
- June 8, 1987. East Fork of the Bruneau River riparian exclosure project, for Idaho Committee for High Desert by Jarbidge RA staff. (est. 6 participants)

(Boise District - continued)

- August 1, 1987. Rabbit Creek Pilot Riparian Project, for the Idaho Wildlife Federation by Owyhee RA and District staff. (6 participants)
- October 8, 1987. East Fork of the Bruneau River riparian protection project, for personnel from the Wilderness Society, the Idaho Wildlife Federation, and the Ada County Fish and Game League, by staff of Jarbidge RA and Boise District. (est. 10 participants)
- October 14, 1987. McBride Creek riparian area, for the Boise District Grazing Advisory Board, by District and Owyhee RA personnel (est. 25 participants)

BURLEY DISTRICT

- May 1986. McMullen Creek tour for Western Stockgrowers Grazing Association and personnel from IDFG and USFS, by Snake River RA and District staff. (13 participants)
- August 1986. Shoshone Creek Pilot Riparian Project, for State Director and District personnel, by riparian coordinator. (8 participants)
- September 1986. Shoshone Creek Pilot Riparian Project, for ISO specialists in fish/wildlife, range, and monitoring, by District riparian coordinator. (4 participants)
- June 2, 1987. Shoshone Creek Pilot Riparian Project, for SCS (Twin Falls Office), ranchers, and District personnel, by riparian coordinator. (11 participants)
- October 1987. Shoshone Creek Pilot Riparian Project, for local rancher and District personnel, by riparian coordinator. (6 participants)

IDAHO FALLS DISTRICT

- May 19, 1986. Birch Creek, Uncle Ike Creek, and Sawmill Creek tour for group of professors from Idaho State University, by District and Big Butte RA staff. (20 participants)

(Idaho Falls Tours - continued)

- July 8-9, 1986. Sawmill Creek Pilot Riparian Project, Summit Creek, and Wet Creek, tour for SCS, IDFG, ISU, USFS, and BLM from ISO and Idaho Falls District, by riparian team leader. (15 participants)
- May 13, 1987. Birch Creek riparian project and small hydro project with riparian/fisheries mitigation, part of statewide wildlife workshop, by Big Butte RA and Idaho Falls District personnel. (12 participants)
- June 2, 1987. Wet Creek riparian research/study area, for Idaho Falls District Grazing Advisory Board, by District and Big Butte RA personnel. (24 participants)
- June 6-7, 1987. Sawmill Creek Pilot Riparian Project, Wet Creek riparian research/study projects, and Summit Creek, for Idaho Chapter of American Fisheries Society, by Big Butte RA and Idaho Falls District staff. (15 participants)
- June 24, 1987. Wet Creek riparian research project (Savory Grazing Method) and study (alternatives to fencing), field trip and techniques demonstration as part of BLM workshop "Riparian area ecology and management", by ISO, USFS, DSC, and Idaho Falls District specialists. (80 participants)
- July 20-21, 1987. South Fork of the Snake River, for WO, ISO, and Phoenix Training Center specialists, by Medicine Lodge RA and Idaho Falls District personnel. (7 participants)
- October 6, 1987. Champagne Creek, Trail Creek, and Cherry Creek, for BLM watershed specialists from ISO/ARS, DSC, and Shoshone Districts, by Big Butte RA and Idaho Falls District staffs. (6 participants)
- October 13, 1987. Birch Creek, Sawmill Creek Pilot Riparian Project, Summit Creek, and Wet Creek riparian research and study projects, for General Accounting Office auditor Joe Gibbons, NSO, and ISO specialists, by Big Butte RA and Idaho Falls District staff. (7 participants)
- October 22-23, 1987. Medicine Lake wetlands and South Fork of the Snake River, for DOI budget specialist, WO Fish/Wildlife Chief, and ISO specialists, by Medicine Lodge RA and Idaho Falls District personnel. (8 participants)

SALMON DISTRICT

- June 1986. Warm Springs, for ISO specialists in range, range improvement, monitoring, and fish/wildlife, by Lemhi RA and Salmon District staff. (9 participants)
- 1986. Herd Creek salmon spawning/riparian improvement project, for fisheries personnel of the Shoshone-Bannock Tribe, by Salmon District and Challis RA staff. (8 participants)
- June 1986. Herd Creek project, for Challis Experimental Stewardship Group, by Salmon District and Challis RA personnel. (65 participants)
- May 12-13, 1987. Thousand Springs wetland area, Main Salmon River upstream from Salmon, ID., and the Warm Springs Pilot Riparian Project, for Idaho wildlife workshop, by Challis and Lemhi RA and Salmon District staffs. (11 participants)
- June 6-7, 1987. Summit Creek riparian project, for Idaho Chapter, American Fisheries Society, by Salmon District riparian coordinator. (15 participants)
- Summer 1987. Summit Creek and Burnt Creek riparian projects, for Idaho State University graduate students, by Challis RA and Salmon District specialists. (10 participants)
- Summer 1987. Sevenmile Creek riparian area, for Lemhi Soil Conservation District, by Lemhi RA and Salmon District staffs. (43 participants)
- Summer 1987. Warm Springs Pilot Riparian Project, for Salmon District Advisory Council, by Lemhi RA and Salmon RA personnel. (est. 20 participants)
- Summer 1987. Carmen Creek Springs, for Lemhi SCD, by Lemhi RA and Salmon District personnel. (est. 50 participants)
- Summer 1987. Warm Springs Pilot Riparian Project, for District Pilot Riparian Committee, by District riparian coordinator. (10 participants)
- Summer 1987. Thousands Springs wetlands, for IDFG biologists, by Challis RA and Salmon District specialists. (40 participants)
- October 1987. Sevenmile Creek riparian area, for ISO and DSC specialists, by District riparian coordinator. (4 participants)
- October 14, 1987. Burnt Creek and Summit Creek riparian projects, for GAO auditor (Joe Gibbons) and ISO specialists, by Challis RA and Salmon District specialists. (5 participants)

SHOSHONE DISTRICT

- 1981. Vinyard Lake and Creek, for SCS, SCD, IDFG, ISO, Idaho Dept. of Health and Welfare, and local farmers, by Shoshone District staff. (est. 10 participants)
- 1983. Vinyard Lake and Creek, for SCD, IDFG, ISO, and Nature Conservancy, by Bennett Hills RA and Shoshone District staff. (6 participants)
- 1983. Star Lake wetland project, for Audubon Society, by Shoshone District specialists. (10 participants)
- 1984. Little Wood River riparian project, fro Magic Valley Fly Fisherman's Assn., by Shoshone District staff. (12 participants)
- 1985 - 1987. Box Canyon. Numerous tours for The Nature Conservancy, ISO specialists and managers, IDFG, EPA specialists, private individuals, and Shoshone District Advisory Council, by Bennett Hills RA and District specialists. (4 to 25 participants)
- April 30 - May 1, 1985. Tour of riparian areas in Camas County and development of watershed/riparian improvement program connected with beaver management, with SCD, SCS, ISO, IDFG, Idaho Dept. of Lands, and private individuals, by local Soil Conservation District and Shoshone District BLM specialists and Rock Springs, WY, biologist Bruce Smith. (12-15 participants)
- 1986. Star Lake wetland project, for Idaho Rangelands Committee, by Shoshone District staff. (60 participants)
- 1986. Little Wood River riparian project, for Idaho Rangelands Committee, by Shoshone District staff. (30 participants)
- 1986. Lava Lake Creek and Dry Creek, for Beaver Committee, by Shoshone District staff. (12 participants)
- 1986. Little Wood River riparian project, for Shoshone District Advisory Council, by Shoshone District personnel. (12 participants)
- June 16-17, 1986. Thorn Creek, Little Wood River, and Camas Prairie riparian projects, for ISO and Colorado State Office staff (Dale Brubaker and Jerry Harmon), by Bennett Hills RA and Shoshone District specialists. (7 participants)
- September 1986. Little Wood riparian project, for Idaho Statewide Cooperative Shrub Restoration Committee, by Shoshone District personnel. (15 participants)

(Shoshone District Tours - continued)

- April 1987. Camas Prairie riparian improvement projects: 2-year progress report tour, for Beaver Committee and WY BLMer Bruce Smith, by Camas Co. SCD and Shoshone BLM. (15 participants)
- May 11, 1987. Thorn Creek Pilot Riparian Project, for ID BLM wildlife workshop, by Bennett Hills RA specialist. (7 participants)
- May 15, 1987. Vinyard Lake/Creek and Box Canyon riparian projects, for ID BLM wildlife workshop, by Bennett Hills RA specialist. (8 participants)
- June 5-6, 1987. Thorn Creek Pilot and Little Wood River Riparian Projects, for ID Chapter of American Fisheries Society, by Bennett Hills and Monument RA specialists. (15 participants)
- June 6, 1987. Thorn Creek Pilot Riparian Project, for Society of Range Management, by Bennett Hills RA specialist. (10 participants)
- Summer 1987. Thorn Creek Pilot Riparian Project, for Shoshone District Grazing Advisory Board, by Shoshone District staff. (15 participants)
- Summer 1987. Thorn Creek Pilot Riparian Project, for USFS, Intermountain Forest & Range Experiment Station riparian team, by Bennett Hills RA specialist. (5 participants)
- Summer 1987. Thorn Creek Pilot Riparian Project, for Committee for Idaho's High Desert, by Bennett Hills RA staff. (5 participants)
- Summer 1987. Thorn Creek Pilot Riparian Project, for North Shoshone Cattlemen's Assn., by Shoshone District personnel. (5 participants)
- October 6, 1987. Dry Creek, Big Wood, Little Wood, and Thorn Creek riparian projects, for DSC, ISO, Burley District, and Idaho Falls District watershed specialists, by Shoshone District specialist. (6 participants)
- October 15, 1987. Big Wood River and Little Wood River riparian projects, for GAO auditor, Joe Gibbons, by ISO specialists and review at Shoshone District Office of Little Wood and Thorn Creek projects. (3-10 participants)
- October 21, 1987. Thorn Creek Pilot Riparian Project, for WD Fish/Wildlife Chief, DOI budget officer, and ISO specialists, by Bennett Hills RA and Shoshone District specialists. (6 participants)

COEUR d'ALENE DISTRICT

- 1985 through 1987. Field trips to Mineral Ridge for Post Falls Elementary School, by Coeur d'Alene District specialists. (est. 90 participants per year)
- Fall 1986. Tour of Silver Valley showing effects of mine tailings on water quality, for BLM, EPA, other interested agencies and individuals, by Coeur d'Alene District specialists. (est. 20 participants)
- Summer 1987. Coordination tour on fish habitat enhancement projects, with USFS, IDFG, BLM, and Nez Perce Tribe personnel. (est. 20 participants)
- August 24-26, 1987. American River and Big Elk Creek projects, as part of summer coordination tour between BLM and IDFG personnel, sponsored by Cottonwood RA, Coeur d'Alene District, and ISO. (40 participants)
- October 21-22, 1987. American River and Big Elk projects, for WO Fisheries Program Leader (Mike Crouse), by Cottonwood RA and Coeur d'Alene District specialists. (4 participants)

RIPARIAN WORKSHOPS/TRAINING

THE FOLLOWING IS A PARTIAL LIST OF RIPARIAN-RELATED WORKSHOPS AND TRAINING THAT IDAHO BLM PERSONNEL PARTICIPATED IN AS INSTRUCTORS, STUDENTS, OR BOTH:

- Annually. Idaho Chapter, American Fisheries Society, Annual Meeting. (various locations, usually Boise, ID).
- 1982-1985. Wildlife/Fisheries Biologists, Beginning Biologist Training, Phoenix Training Center. Phoenix, AZ.
- April 16-18, 1985. Riparian Ecosystems and Their Management: Reconciling Conflicting Uses. Tucson, AZ.
- July 1-2, 1985. Riparian Issue Meeting for Idaho BLM Managers and Program Leaders in Range, Watershed, and Wildlife. Boise, ID.
- October, 1985. Meadow Creek and Other Riparian Projects of Pacific Northwest Forest and Range Experiment Station. La Grande, OR.
- December 6-9, 1985. Idaho BLM Riparian Workshop. Boise, ID.
- 1985. Workshop, Water Quality Analysis, Interpretation, and Evaluation, ISO. Boise, ID.
- 1986. Workshop, Groundwater Evaluation Techniques, ISO. Boise, ID.
- 1986. Nez Perce National Forest Riparian Projects. Grangeville, ID.
- 1986. Riparian Conference, Eastern Washington University. Cheney, WA.
- 1986. Rocky Mountain Region, U.S. Forest Service, Riparian Workshop. Missoula, MT.
- December 1986 and December 1987. Riparian Short Course. Don Chapman, Assoc. Boise, ID.
- February 11-13, 1987. Wildlife/Forestry Riparian Interrelationships, Streamside Management Symposium. University of Washington. Seattle, WA.
- May 19-20, 1987. Riparian Workshop, Oregon BLM. Prineville, OR.

(Riparian Workshops/Training - continued)

- May 1987. Annual Meeting, Society of Wetland Scientists. Seattle, WA.
- June 22-25, 1987. Riparian Area Ecology and Management Workshop, Idaho BLM. Idaho Falls, ID.
- 1987. Workshop, Land Classification Based on Vegetation. University of Idaho. Moscow, ID.
- 1987. Training, Riparian Survey Techniques, Panhandle National Forest. Coeur d'Alene, ID.
- 1987. Riparian Workshop, Nez Perce National Forest. Grangeville, ID.
- 1987. Training, Designing and Conducting Studies Using IFIM, USFWS 200. Ft. Collins, CO.
- 1987. Training, Field Techniques for Stream Habitat Analysis, USFWS 205. Ft. Collins, CO.

OTHER

Bozorth, Tim.

- Member, Riparian Committee, Idaho Chapter, American Fisheries Society, 1987 - present.

- Member, Riparian Coordination and Research Group, 1986-present.

Gebhardt, Karl.

- Member, BLM Riparian Task Force, 1986 - present. Chairman, Group on Riparian Classification.

- Member, Riparian Coordination and Research Group, 1986-present.

Hogander, Geoff.

- Member, Riparian Committee, Western Division, American Fisheries Society, 1987 - present.

Johnson, Craig.

- Member, Riparian Committee, Western Division, American Fisheries Society, 1987 - present.

Thomas, Allan.

- Member, BLM Riparian Task Force, 1984 - present. Member, Group on Inventory and Monitoring Techniques.

- Member, Riparian Committee, Idaho Chapter, American Fisheries Society, 1983 - 1985.

- Member, Riparian Committee, Western Division, American Fisheries Society, 1982 - 1984, 1986 - present.

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