

**Blackbird Mine  
Natural Resource Trustee  
Council**

**State of Idaho  
U.S. Forest Service  
National Oceanic and Atmospheric Administration**

**DATA REPORT**

**PANTHER CREEK BIOLOGICAL RESTORATION AND  
COMPENSATION PLAN**

**SMOLT SURVIVAL PLAN ELEMENT 2 - LIVESTOCK EXCLUSION ON  
PRIVATE LANDS OUTSIDE OF PANTHER CREEK BASIN**

**YEAR 1 - BASELINE MONITORING**

**1997**

## **Data Report**

### **Panther Creek Biological Restoration and Compensation Plan Smolt Survival Plan Element 2 - Livestock Exclusion on Private Lands Outside of Panther Creek Basin**

#### **Year 1 - Baseline Monitoring (August 26-27, 1997)**

## **BACKGROUND**

The Biological Restoration and Compensation Plan (BRCP) is included as Appendix B to the Blackbird Mine Site Consent Decree<sup>1</sup>. The BRCP contains provisions to restore injured natural resources and compensate the public for interim losses resulting from injury to or destruction of natural resources. Element 2 of Section II (Smolt Survival Plan) of the BRCP involves fencing the riparian corridor of selected stream reaches on private lands in cooperation with landowners. Plan requirements are 2.0 miles within the Panther Creek basin (50 yr project) and 5.0 miles or 8.0 miles (100 yr and 50 yr project options, respectively) outside the Panther Creek basin. The intent of this element is to improve chinook salmon habitat by re-establishing a riparian vegetation community, which will develop and maintain stream bank and channel structure, moderate water temperatures, and improve spawning and rearing habitat. BRCP implementation is the responsibility of the Settling Defendants (M.A. Hanna Company and Rojet Enterprises, Inc.; Noranda Mining, Inc.; Noranda Exploration, Inc.; Blackbird Mining Company; and Alumat Corporation), with Trustee oversight. The Blackbird Mine Site Group (BMSG), which includes Dave Jackson, project coordinator for Alumat; and Joe Scheuering, project coordinator for Noranda Mining, Inc.; represents the Settling Defendants in BRCP implementation.

On May 1, 1997, the BMSG entered into an agreement with Karl Tyler, owner of the Little Eight Mile Ranch, near Leadore, Idaho, to fence and exclude livestock from at least 8.0 contiguous miles of stream along the Lemhi River and Big Springs Creek, with the 50 year option identified in the Smolt Survival Plan. Fence construction began in January 1998, with project completion expected in late Spring or early Summer 1998. On August 26 and 27, 1997, a monitoring team representing the Blackbird Mine Trustee Council assessed riparian conditions along selected segments of the Lemhi River and Big Springs Creek to establish a baseline for evaluating the recovery of riparian habitat.

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<sup>1</sup> Natural Resource Damage Consent Decree No. 83-4179 (State of Idaho, et al. v. The M.S. Hanna Company, et al.) Entered on September 1, 1995.

## SITE SELECTION

The reach of the Lemhi River within Little Eight Mile Ranch contains a mix of good and degraded habitat and is within the portion of the river currently used by Snake River spring/summer chinook salmon (listed as threatened species under the Endangered Species Act) as spawning and rearing habitat and by Snake River Basin steelhead (listed as a threatened species under the Endangered Species Act) as rearing habitat. The Model Watershed Plan (Idaho Soil Conservation Commission, 1995) reports that the section of the Lemhi River that includes the Little Eight Mile Ranch contains good spawning gravels, but only 70% of stream banks are stable, causing siltation problems that impair habitat quality. High water temperatures and limited stream side vegetative cover also adversely affect habitat quality. Big Springs Creek supported chinook salmon and steelhead historically but is now limited by high water temperatures, insufficient pool diversity and depth, lack of stream side vegetative cover, and severely limited spawning habitat due to sedimentation from unstable stream banks (Idaho Soil Conservation Commission, 1995).

The monitoring team selected stream segments (three on Lemhi River, two on Big Springs Creek) as long term sites to monitor the recovery of the riparian corridor. We conducted a site assessment in 1997 to establish baseline (pre-fencing) conditions. Monitoring team members included Christopher Mebane, Idaho Dept. of Environmental Quality (08/26 and 08/27), Steve Beverlin and Angela Perry, U.S. Bureau of Land Management (08/26), Tom Herron, Idaho Dept. of Environmental Quality (08/27), and Nicholas Iadanza, National Marine Fisheries Service (08/26 and 08/27). We designated sites as TR (Tyler Ranch) and numbered them in the order of establishment. We selected sites between 100 and 200 yards long, with lengths dependent on stream bank access and bank and vegetation condition. Since the intent of the fencing is riparian habitat restoration, we biased site selection toward poor stream side habitat, and all reaches contain some unstable banks and degraded vegetative community. We placed metal T-posts in the ground along one stream bank to permanently mark upper and lower site boundaries. We also placed steel concrete reinforcing bar (re-bar) streamward of the T-posts to mark the upper and lower greenline boundaries. We marked upper and lower site boundaries on the opposite bank with re-bar placed in the ground directly across the stream from the T-posts. We determined and recorded latitude and longitude of the upper and lower boundary T-posts using a Global Positioning System. Right and left bank designations are based on the sampler facing downstream. General site location descriptions follow.

### TR1

Lemhi River. The site is downstream of a newly placed (1997) upper rail car bridge. The upper boundary T-post is located on the right bank, 12 feet downstream of the right bank bridge abutment. The distance from the lower boundary T-post to the bridge is 109 yds, as measured by a Bushnell Laser Ranging rangefinder. The upper T-post is on right bank at 44° 43' 3.9" N, 113° 24' 48.2" W. The lower T-post is on right bank at 44° 43' 05.2" N, 113° 24' 49.5" W. The re-bar

marking the upper right bank greenline boundary is streamward of the T-post (12 ft downstream of bridge abutment). The re-bar marking the lower right bank greenline boundary is 10 ft streamward of the T-post. The rebar marking the upper left bank greenline boundary is 16 ft downstream of the bridge abutment. The lower left greenline boundary re-bar is directly across the stream from the right bank T-post, just downstream of a mature willow.

#### TR2

Lemhi River. The site is near upstream property boundary. The upper boundary T-post is located on the left bank, 60 feet downstream of an existing fence line. The upper T-post is on the left bank at 44° 42' 51.1" N, 113° 24' 29.1" W. The lower T-post is on the left bank at 44° 42' 52.8" N, 113° 24' 24.9" W. Re-bar marking the upper left bank greenline boundary is streamward of the T-post. The lower left bank greenline boundary re-bar is streamward of the lower T-post, immediately upstream of a mature willow. The right bank lower greenline boundary is marked with re-bar directly across the stream from the left bank T-post, just upstream of a mature willow. The right bank upper greenline boundary re-bar is directly across the stream from the left bank T-post, just downstream from a large willow clump.

#### TR3

Big Springs Creek. The site is near the upper property boundary, downstream of a stream crossing near a fish screen. The upper T-post is on the left bank at 44° 42' 57.9" N, 113° 24' 54.6" W. The lower T-post is on the left bank at 44° 42' 57.3" N, 113° 25' 00.2" W. Re-bar marking the upper left bank greenline boundary is 11 ft streamward of the T-post. The lower left bank greenline boundary re-bar is streamward of the T-post, just upstream of a willow clump.

#### TR4

Big Springs Creek. The site is upstream of bridge crossing Big Springs Creek near the confluence with the Lemhi River. The lower boundary T-post is located at the neck of lyre-shaped meander, along the left bank at 44° 43' 35.0" N, 113° 25' 58.3" W. The upper T-post is on the left bank at 44° 43' 32.5" N, 113° 25' 57.6" W. The re-bar marking the lower left bank greenline boundary is located 12 ft streamward of the T-post at azimuth 271°. The re-bar marking the upper left bank greenline boundary is 15 ft streamward from the T-post at azimuth 269°. The lower right bank greenline boundary re-bar is located at azimuth 271° from the left bank T-post.

#### TR5

Lemhi River. This is a photo point only, established at the downstream left bank abutment of a newly placed (1997) rail car bridge crossing the Lemhi River upstream of the confluence with Big Springs Creek. Photo point location is at 44° 43' 40.1" N, 113° 25' 57.4" W.

#### TR6

Lemhi River. The site is downstream of the confluence with Big Springs Creek. Access along right bank is via a road to fish screen. The upper T-post is located near a goose nesting platform on the right bank at 44° 43' 48.7" N, 113° 26' 11.9" W. The lower T-post is located on the right

bank at 44° 43' 52.2" N, 113° 26' 12.3" W. The upper right bank greenline boundary re-bar is aligned with with the T-post and the goose nesting platform, 9 ft streamward of the T-post. The lower right bank greenline boundary re-bar is 12 ft streamward of the T-post, near a white PVC fish return pipe (from the fish screen). The lower left bank greenline boundary re-bar is adjacent to the stream, aligned with the T-post on the opposite bank and the “notch” in the Beaverhead Mountain skyline. The upper left bank greenline boundary re-bar is aligned with the T-post and goose nesting platform on the opposite bank.

## **METHODS**

We used Modified Green Line Vegetation Composition surveys, Woody Species Regeneration surveys, and photographs from established points to characterize the riparian community conditions. Method descriptions follow.

### **Modified Green Line Vegetation Composition survey**

The survey consists of an ocular estimate of the vegetative community type at the water’s edge. The method used in this survey is a modification adopted by the Bureau of Land Management’s Lemhi Resource Area of the protocol in the Integrated Riparian Evaluation Guide (USDA, 1992). The following procedure is used for the modified green line survey. The green line is defined as that specific area where a more or less continuous cover of perennial vegetation is encountered when moving away from the water source. We established the green line at the water’s edge. We selected upper and lower boundaries of the reach to include a mix of bank and vegetative community types representative of the stream section. Beginning at the point on one stream bank where the boundary transect (upper or lower) intersects the stream, the sampler proceeds upstream or downstream along the green line toward the other boundary, taking uniform steps and recording his/her observations of the green line vegetation community type composition covered in each step on a field data sheet. Vegetation community type composition is recorded as: (1) *Carex* (to include > 70% *Carex* spp.), (2) *Carex*/other grass/forb mix (can include 20% - 70% *Carex* spp.), (3) Other grass/forb, (4) riparian shrub, (5) mesic shrub, and (6) bare soil. Upon reaching the boundary marker, the sampler crosses the stream and repeats the sampling process on the other bank, beginning a separate tally. The number of steps on the right and left banks may not be the same due to the difference in lengths of meanders on each side of the stream. The total number of each vegetation community type encountered along the green line on each bank is tallied and divided by the total number of steps on that bank to calculate the percent composition for each community type. Left and right bank data are calculated separately.

### **Woody Riparian Vegetation Regeneration**

The survey consists of a measurement of woody species regeneration along the same green line and in a similar manner that the modified green line vegetation composition survey is measured.

The sampler uses a 6-ft pole to define the observation area. Measurements are made by walking the bank on each side of the stream holding the pole perpendicular with one end of the pole held over the green line. Woody species observed within the 6 ft wide area covered by the pole are recorded. All rooted woody species within the area defined by the ends of the pole are tallied on field data sheets based on the following age categories: (1) Seedling/Sprout, (2) Young/Sapling, (3) Mature, (4) Decadent, and (5) Dead. The dominant woody species on this segment of the Lemhi River is willow (*Salix* spp.). In this survey, we counted single unbranched stems in the seedling/sprout category; multiple stems growing from one location, and single branched stems in the young/sapling category. Larger diameter, multi-branched trees with leaves were counted as mature; trees without leaves that appeared to be dying were counted as decadent.

The total number of each age category encountered along the green line on each bank is tallied and divided by the total number of steps on that bank to calculate the percent composition for each age class. Left and right bank data are calculated separately.

### **Photographic Documentation**

We took photographs at the upper and lower boundaries of each site to document conditions within and around the site. We used a 35 mm autofocus/autoexposure camera equipped with a 28 mm lens and loaded with ISO 200 color print film. We positioned the camera atop the T-post at each boundary (except for TR5) and recorded the azimuth for each photograph. We photographed upstream, downstream, and across stream angles were at most stations; a panoramic series was taken at some. At TR5 (photographic point only), we positioned the camera on the upstream and downstream ends of the bridge railing on the left bank of the stream for upstream and downstream photos. A list of photo point location descriptions is included as Appendix 1. Copies of site photographs are included as Appendix 2.

### **OBSERVATIONS**

Data for the modified green line and woody species regeneration surveys are presented in Appendix 3. Data are reported by site as observed numbers and percent composition of vegetative community types from green line surveys, and observed numbers of woody species age classes from woody species regeneration surveys. Percent composition of vegetative community categories for the modified green line are arranged in figures from most stable (riparian shrub, *Carex*) to least stable (bare soil).

Measurement of community type composition at the water's edge can provide an indication of the general health of the stream. There is a strong relationship between the amount and kind of vegetation along the water's edge and bank stability. Natural plant species forming the green line (e.g. sedges, willows) are generally good buffers of water forces, and the root density and mass associated with a well-developed green line vegetation community stabilizes stream banks,

enhancing channel stability. Disturbance activities result in changes to species such as Kentucky bluegrass or red top, which have reduced ability to buffer water forces, resulting in bank instability and erosion.

A tally of shrubs by age class provides a preliminary indication of regeneration of shrubs in that complex. A high proportion of plants recorded in the sprout, young, and early mature categories would indicate the shrub component of the complex is in an upward trend. Conversely, low numbers of plants in the sprout and young categories would indicate that current management may be suppressing woody species. However, not all riparian areas are suited for the establishment of woody species. Soil type and ability of the soil to retain moisture affect regeneration. Competition from herbaceous species, such as sedges and rushes (which can effectively stabilize stream banks) may prevent colonization by woody species.

We expect to monitor the selected segments yearly over the next several years to document conditions and assess the effects of exclusion fencing on the riparian vegetation community and the condition of the streams.

## **REFERENCES**

Idaho Soil Conservation Commission. 1995. Model Watershed Plan, Lemhi, Pahsimeroi, and East Fork of the Salmon River. Report DOE/BP-2772 funded by the Bonneville Power Administration.

USDA Forest Service. 1992. Integrated Riparian Evaluation Guide, Intermountain Region. Ogden, Utah.