# FINAL
# ENVIRONMENTAL ASSESSMENT

## Stream Restoration and Trout Habitat Enhancement on the East Fork Sevier River on the Kingston Canyon Wildlife Management Area in Piute County, Utah

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## INTRODUCTION

In 2001, Utah Governor Michael O. Leavitt initiated the Blue Ribbon Fisheries Program with the purpose of creating more opportunities to anglers for quality fishing experiences in aesthetically pleasing settings where the waters are environmentally productive and sustain healthy fish populations. The Blue Ribbon Fisheries Council identified the East Fork Sevier River as a Blue Ribbon Fishery stream. As a result of this program, in August 2003 the Utah Division of Wildlife Resources (Division) purchased 246 acres of private land along the East Fork Sevier River in Piute County, Utah, and opened it up to public angling and recreation.

Known as the Kingston Canyon Wildlife Management Area (WMA), it includes 1.8 miles of the East Fork Sevier River and is located 5.5 miles below Otter Creek Reservoir and 8.5 miles above Piute Reservoir (Fig. 1). Combined with 0.7 mile of stream on Bureau of Land Management (BLM) land above the WMA and 1.5 miles of stream on BLM and Utah School Institute Trust Lands Administration (SITLA) land below it, 4 miles of stream are now open to public fishing. Utah State Parks and campgrounds occur at Otter Creek and Piute Reservoirs, which are nearby popular fishing destinations (Fig. 1).

The Division is proposing to conduct stream restoration along a degraded stretch of the East Fork Sevier River to improve fish and wildlife habitat for enhanced angling and wildlife viewing. The Division would fund the project in part with a federal grant under the Sport Fish Restoration Act and provide a match with State funds. The U.S. Fish and Wildlife Service administers the Sport Fish Restoration program and must determine the proposed project's eligibility for federal funding, assess its character and design, and ensure compliance with Federal rules and regulations before approving the grant.

## PURPOSE AND NEED

Much of the East Fork Sevier River on the Kingston Canyon WMA has good quality habitat for brown trout (*Salmo trutta*), rainbow trout (*Oncorhyncus mykiss*), and cutthroat trout (*O. clarki*), supporting a

level of trout biomass that meets angling demands. Electrofishing surveys in this area resulted in trout biomass ranging from 82 to 98 pounds per acre. However, about 1,300-feet of stream has been channelized with dirt berms along the banks. This stream section is basically one long riffle and provides poor fish habitat. Further downstream, about 2,200 feet of stream banks lack riparian vegetation and are severely eroded. The channel is wide and shallow and provides poor fish habitat. Surveys in the channelized section and the eroding sections resulted in trout biomass of 33 and 53 pounds per acre, respectively.

When the stream was channelized in the 1940s, it was moved to the north and the old stream channel was abandoned. There is no longer any surface water connection between the abandoned old channel and the existing channelized stream, except during very high flood events. The old channel is now wetlands with cattails (*Typha* spp.), sedges (*Carex* spp.), rushes (*Juncus* and *Eleohacris* spp.) and other emergent wetland vegetation present. However, surface water in the old channel wetlands is only present during the summer irrigation season. Each year from about April 20 through October 1, irrigation water is released from Otter Creek Reservoir, which flows through the project area for agricultural use down stream. During the irrigation season, stream flows average 150 to 210 cubic feet per second (cfs), then typically drop to 15 to 25 cfs during the winter period. During high flows of the irrigation season, ground water seeps into the wetlands of the old stream channel and remains as surface water. Once irrigation releases end and the stream returns to base flows (15 to 25 cfs), ground water is not high enough or sufficient to provide surface water to the wetlands. There is no surface water in the wetlands from October through mid-April. This condition reduces the value of the wetlands for amphibians, songbirds and small mammals. Because water is not present until late-April, amphibian wintering habitat is reduced and reproduction cannot occur. Habitat availability and quality for waterfowl and songbirds that nest or forage in wetlands are reduced or absent in the early spring breeding period and in the fall.

The purpose of the proposed action (preferred alternative) is to increase trout biomass in the East Fork Sevier River by creating and enhancing trout habitat. This will be achieved by restoring the natural channel meander pattern, profile and dimensions; stabilizing stream banks; installing in-stream structures and cover; and restoring woody riparian vegetation. An additional purpose is to restore year-round surface water in the wetlands of the abandoned old stream channel and enhance riparian and wetland habitat for amphibians, birds, and small mammals. The proposed action would help return the area to a more naturally functioning riverine system with stream, riparian and wetland diversity, complexity and connectivity, and enhance angling and wildlife viewing opportunities.

## ALTERNATIVES

### Alternative A (Preferred)

The proposed project would be implemented in two phases.

Phase 1: construct new stream channel and meanders and restore year-round surface water to the abandoned old channel wetlands. This phase would begin mid-October of 2004.

Phase 2: stabilize eroding stream banks and restore proper channel width and depth dimensions. This phase would begin in October 2005.

Each phase will take up to 6 to 8 weeks to complete. Work will occur while stream flows are low. Heavy equipment (excavators, front-end loader and dump trucks) will be used to build a new channel, reshape stream banks and channel, build floodplains, and install in-stream rock, log and root-wad structures. All disturbed areas would be reseeded and planted with woody riparian vegetation.

Rocks to be installed as in-stream structures will be harvested from the base of an existing rockslide on land owned by the SITLA within Kingston Canyon about a mile from the project site. About 1,000 cubic yards of rhyolite rock will be trucked to the project site. The area where the rock is harvested will be reclaimed by recontouring it to previous conditions and seeding any disturbed soils with an appropriate native seed mix.

Phase 1

*New Channel*

The 1,300 feet section of channelized stream will be restored to a meandering pool/riffle/pool sequence located within the existing floodplain and a low terrace area. The new stream channel geometry (dimension, pattern and profile) is based on measurements taken from a "reference reach" of the river located 1.5 miles below the project area (Table 1). Reference reaches are sites on the stream that are considered stable, with good habitat condition, and are not aggrading or degrading. The dimension, pattern and profile of a reference reach can be reconstructed on a section of stream in poor condition to create a stable stream with good habitat.

**Table 1. Morphological characteristics of the existing, reference reach, and proposed new channel.**

| Variable | Existing Channel | Reference Reach | Proposed Channel |
|---|---|---|---|
| Stream Type (Rosgen) | C3 | C3 | C3 |
| Valley Type (Rosgen) | IV | IV | IV |
| Bankfull Width, ft | 50.5 | 34 | 34 |
| Bankfull Mean Depth, ft | 1.4 | 2.1 | 2.1 |
| Width/Depth Ratio | 29 | 16 | 16 |
| Bankfull Cross-Sectional Area, $ft^2$ | 88 | 73 | 75 |
| Bankfull Discharge, cfs | 342 | 342 | 342 |
| Velocity (U) ft/sec. | 4.0 | 4.3 | 4.3 |
| Meander Wave Length, ft | - | 154 | 203 |
| Radius of Curvature, ft | 84 | 41- 47 | 50 - 65 |
| Belt Width, ft | 98 | 130 | 150 |
| Stream Length, ft | 1,365 | 487 | 1,729 |
| Sinuosity | 1.06 | 1.4 | 1.4 |
| Avg. Water Surface Slope | 0.005 | 0.004 | 0.004 |
| Riffle Slope | .012 | .02 | .01 - .02 |
| Max. Pool Depth, ft | 4.4 | 6.3 | 6.0 |
| Pool to Pool Spacing, ft | 256 | 102 -197 | 150 -190 |

Stream length will be increased from 1,365 feet to about 1,730 feet and have nine outside meander bends; four of the outside meander bends will be located in the existing stream channel (Fig. 2). Where possible, the existing channel that is not incorporated as part of the new channel will be left connected to the new channel, creating backwater areas that provide good habitat for young trout and native minnows. The

upper layer of the low terrace where the new channel is built will be graded down to the floodplain elevation to allow the stream to spread out during high flows. Dirt berms and old car rip-rap, which impede the stream from spreading out onto floodplains in several locations, will be removed. The material will be hauled out of the flood prone area, thereby reconnecting the stream to the floodplains. The old car rip-rap will be buried in upland areas outside the floodplain. The soil from the berms will be spread and smoothed out in upland sagebrush areas, then reseeded with an appropriate upland seed mix of native grasses and sagebrush.

Fish habitat and stream bank stabilization structures will be installed on the outside banks of the new channel. Rock and log vanes protect stream banks by redirecting stream flows away from banks while creating pools, cover and diversity for fish. Root wads and logs will also be installed as habitat features to provide cover, structure and diversity in the stream. Juniper tree revetment will be placed along the toe of some of the stream banks to protect the bank from eroding and provide fish habitat (Figs. 3-6). Placement of rock and log structures and juniper revetment would not impede water flow down stream.

Additional bank stabilization will be accomplished by installing biodegradable erosion control fabric, which will prevent loose soil from eroding until riparian vegetation becomes well established in about 3 to 5 years. Stream banks will be planted with willow (*Salix* spp.) cuttings and bare root native trees and shrubs. In addition to willows, tree and shrub species planted will be narrowleaf cottonwood (*Populus angustifolia*), water birch (*Betula occidentalis*), box elder (*Acer negundo*), chokecherry (*Prunus virginiana*), red-osier dogwood (*Cornus sericea*), and golden currant (*Ribes aureum*).

All disturbed areas will be reseeded with an appropriate riparian native grass seed mixture. The area will be monitored and invasive non-native vegetation would be herbicided or removed until native vegetation is established. Tamarisk trees (*Tamarix ramosissima*) on the project site will be cut and painted with herbicide. Herbicides and removal methods used will conform to accepted standards in invasive vegetation control in riparian habitat.

*Provide Water to Old Stream Channel Wetlands*

In addition to the new channel, Phase 1 will include restoring year-round surface water to the abandoned old stream channel wetlands. To accomplish restoring water to the wetlands, slotted 8-inch diameter pipe will be placed below the streambed in the new channel to collect subsurface water, and a buried pipeline will deliver the water to the beginning of the old channel wetlands.

Approximately 100 feet of 8-inch diameter PVC slotted pipe will be placed 30 inches below the bed elevation of the stream in the second riffle area of the new channel. Geotextile filter fabric will be laid in the trench, followed by the slotted pipe. Washed 1-inch gravel will be placed 12 inches around the pipe, the filter fabric closed on top of the gravel, and the excavated streambed material replaced to the proper riffle elevation. Geotextile filter fabric prevents fine sediment and clays from clogging the gravel and slotted pipes, but allows water to pass through. The 8-inch slotted pipe will be reduced down to a 3-inch pipe. The buried 3-inch pipe will be approximately 300 feet long and daylight about 12 inches above the water surface elevation of the wetlands. A shut-off valve will be installed on the end of the pipe to adjust the volume of water exiting the pipe. The pipe slope will be 1 per cent. Water collected in the pipe will flow into and through the old channel wetland and re-enter the stream approximately 1,650 feet below the collection area. The buried pipe will avoid large trees and other woody riparian vegetation as much as possible.

*Excavate Backwater Area*

An old side channel that has filled in with sediment will be excavated to create a 1- to 2-feet deep backwater area that will be connected to the stream, including during low flows. The water flowing through the abandoned stream channel wetland, as described above, will drain into this backwater and then into the stream. The backwater area will be 0.1 acre in size. This backwater area will be created only if water flow through the old stream channel wetland can be established. All disturbed stream banks and new floodplains will be seeded with an appropriate riparian native seed mix of grasses and forbs. Willow pole cuttings and bare root trees and shrubs will be planted on stream banks.

Phase 2

*Stabilize Stream Banks*

Phase 2 of the project covers approximately 2,200 feet of stream below the Phase 1 section (Fig. 7). Phase 2 involves stabilizing vertical eroding stream banks, restoring proper channel width and depth dimensions, building floodplains and enhancing trout habitat by adding in-stream structures and cover. The location, slope and pattern of the stream will not be changed.

Vertical eroding banks will be sloped back to a minimum 3:1 slope, rock and log vanes installed to protect banks, erosion control fabric and juniper tree revetment installed where necessary, root wads and logs placed for fish habitat and cover, and willow cuttings and bare root trees and shrubs planted. The stream channel will be deepened and narrowed to match the reference reach dimensions. Floodplains will be constructed in areas where necessary. All areas disturbed will be reseeded with a native grass seed mixture.

Table 2 summarizes the estimated amount of material that will be excavated; the amount of rock, logs, and root wads installed; and the length of erosion control fabric and juniper revetment to be installed.

**Table 2. Estimates of excavated and fill material and structures.**

| Item Description | Cubic Yards | Number |
|---|---|---|
| New Channel & Low Terrace Excavation (Phase 1) | 6,400 | - |
| Rock Vanes Installed (Phase 1&2) | 300 | 30 |
| Logs Installed (40’ length) (Phase 1&2) | 200 | 20 |
| Root Wads/Cover Logs Installed (Phase 1&2) | 100 | 40 |
| Erosion Control Fabric (Phase 1&2) | - | 800 ft |
| Juniper Revetment (Phase 1&2) | - | 500 ft |
| Bank Sloping/Shaping/Stabilization (Phase 2) | 2,000 | 2,200 ft |
| New Backwater Area (Phase 1) | 450 | 0.1 acre |

**Alternative B**

Phase 1 and Phase 2, as described in Alternative A, would be completed, except installing a pipeline to provide water to the old stream channel wetlands and excavating a new backwater would not occur.

**Alternative C**

Only Phase 1, including installing a pipeline to provide water to the old stream channel wetlands and excavating a new backwater, as described in Alternative A, would be completed. Phase 2, as described in Alternative A, would not occur.

**Alternative D**

Phase 1, including installing a pipeline to provide water to the old stream channel wetlands and excavating a new backwater, as described in Alternative A, would not occur.

Phase 2, as described in Alternative A, would be completed, but the work area would be expanded to include the existing 1,365 feet of stream of the Phase 1 channelized section. The latter section of stream would remain in its current location, pattern and profile, but vertical eroding stream banks would be stabilized, proper channel width and depth dimensions restored, some floodplains built and trout habitat improved by adding in-stream structures and cover, as described for Phase 2.

**Alternative E**

No action to address the previously described problems and needs would be taken. The existing stream would remain in its present condition.

**Alternative Considered but Dismissed**

Reducing the amount of work to about 1,000 feet or less in both phases was considered but dismissed. This alternative was dismissed because it would not sufficiently meet the project objectives of increasing the trout biomass and populations and enhancing riparian and wetland habitat. Therefore, this option would not be cost effective. The start-up cost of heavy equipment and planning time would not be justified by the small amount of stream habitat improvement derived.

**Selection of Preferred Alternative**

Alternative A has the highest potential to accomplish the project objectives of increasing trout biomass in the East Fork Sevier River; restoring year-round surface water in the wetlands of the old stream channel; enhancing riparian and wetland habitat for amphibians, birds, and small mammals; and adding diversity, complexity and connectivity to the aquatic system.

Alternative B would meet the objective of increasing trout biomass, but would not restore year-round surface water needed to improve wildlife habitat in the old stream channel wetlands.

Alternative C would improve trout habitat and increase trout biomass in a shorter length of stream. However, Alternative C would not increase overall trout biomass and population or improve riparian habitat in the Phase 2 section of stream.

Alternative D would not increase stream length as proposed in Phase 1 of Alternative A, so the amount of trout habitat improved would be less and the overall increase in trout biomass and population would be lower than Alternative A. Alternative D would not provide year-round surface water needed to improve wildlife habitat in the old stream channel. Also, the section of stream slated for Phase 1 of Alternative A

would not be restored to its proper pattern and profile. Consequently, Alternative A was chosen as the preferred alternative.

**Table 3. Analysis of the potential for each alternative to meet project objectives.**

| Objective | Potential for Each Alternative to Meet Objective | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| Increase trout biomass | High | High | Medium | Medium | Low |
| Increase trout habitat | High | High | Medium | Medium | Low |
| Establish year-round surface water to wetland | High | Low | High | Low | Low |
| Enhance riparian habitat | High | High | Medium | High | Low |
| Stabilize eroding banks | High | High | Medium | High | Low |
| Restore correct channel dimension, pattern & profile | High | High | Medium | Medium | Low |
| Create diversity, complexity & connectivity | High | Medium | Medium | Medium | Low |
| Improve water quality | High | High | Medium | Medium | Low |

# AFFECTED ENVIRONMENT

## Soils

Soils in the project area are a thick layer of alluvium material consisting of gravelly loamy coarse sand and gray loam. Scattered through the soils are boulders up to 3 feet in diameter that have fallen from the steep rocky cliffs on the valley sides. The property is an old ranching homestead that produced grass hay and pasture land in the past. The actual project site along the stream is outside of any historically farmed land. No prime or unique farmlands occur on or adjacent to the project site.

## Hydrology and Floodplains

The drainage basin for the East Fork Sevier River is 1,207 square miles with three major storage reservoirs and several smaller reservoirs located above the project area. During wet climatic periods when the reservoirs are all full, peak spring runoff can exceed 1,000 cfs, but typically the peak flow is about 580 cfs. Most years the reservoirs control spring runoff and bank full flows are calculated to be about 342 cfs. From about April 20 through October 1 irrigation water is released from Otter Creek Reservoir 6.5 miles upstream of the project and flows through the project area for agricultural use downstream. During the summer irrigation season, stream flows average 150 to 210 cfs, then typically drop to 15 to 25 cfs during the non-irrigation (winter) period.

Within the project area, a 1,300-foot long section of stream has been channelized with dirt berms along the banks. During flood events the berms partially limit water from accessing floodplains. The stream generally has access to floodplains in other areas of the project.

When the stream was channelized it was pushed to the north against a hillside and the old channel abandoned. The old channel and the existing stream are separated by a low terrace, and there is no surface water connection between the existing stream and the abandoned old channel, except during rare high floods that can overtop the low terrace. The channelized stream section is generally one long riffle lacking pools, floodplains, and trout habitat.

Below the channelized section, approximately 2,200 feet of eroding stream banks lack woody riparian vegetation. The stream has degraded to mostly a wide shallow channel and vertical eroding banks. However, this section retains a natural meander pattern.

**Wetlands**

Several wetland types are found in the project area. The stream banks, floodplains and high-flow side channels are generally wet enough to support obligate and facultative wetland plant species. Common wetland plants present include Baltic rush (*Juncus balticus*), sedges (*Carex* spp.), horsetail (*Equisetum* spp.), grasses, willows, water birch, and narrow-leaf cottonwood. High-flow side channels that are slightly lower than floodplain elevation run through the floodplains. Some of these side channels have low pool areas that provide standing water during the summer irrigation season. There are approximately 4 acres of floodplain wetlands within the project area.

The abandoned old stream channel has standing surface water during the summer irrigation season and supports emergent wetland vegetation. Common wetland plants here include cattails, hardstem bulrush (*Scirpus acutus*.), spikerush (*Eleocharis palustris*), and duckweed (*Lemna* spp.). The old channel emergent vegetation wetland covers 0.9 acre.

**Vegetation**

The project area is influenced by a rain shadow effect from Mount Dutton and only receives about 9 to10 inches of annual precipitation. Upland vegetation is comprised of pinyon (*Pinus edulis*) and juniper (*Juniperus* sp.) trees, sagebrush (*Artemisia* spp.), rabbitbrush (*Chrysothamnus* spp.) and grasses. South-facing upland slopes are sparsely vegetated.

The Phase 1 area of the project supports a multi-storied riparian zone with cottonwood, box elder, river birch, hawthorn (*Crataegus* spp.), golden currant, willows, red-osier dogwood, grasses, sedges, and other species. Riparian vegetation in the Phase 2 area consists of mid-story species such as river birch, willows, red-osier dogwood, and golden currant, as well as grasses and sedges.

In the past, the riparian zone has been grazed continuously by livestock. Livestock grazing has reduced recruitment of young woody vegetation and the density of the riparian sub-canopy is low. Since the Division acquired the property, livestock grazing has been removed. Overall, the quality of riparian habitat on the Kingston Canyon WMA would be considered fair to good for wildlife.

A small number of invasive, non-native tamarisk trees occur in the riparian area on the project site. Non-native thistles also occur on the WMA and are herbicided every year to forestall invasion.

**Fisheries and Wildlife**

The existing sport fishery is comprised of brown, rainbow, and cutthroat trout. Trout populations are maintained by annual stocking and migration of fish downstream from Otter Creek Reservoir. Very little natural recruitment occurs. There are also good population numbers of native non-game fish, including redside shiner (*Richardsonius balteatus*), leatherside chub (*Gila copei*), speckled dace (*Rhinichthys osculus*), mountain sucker (*Catostomus platyrhyncus*) and Utah sucker (*C. ardens*).

A wide variety of bird, mammal, amphibian, and reptile species are present on the WMA. The riparian zone provides very important breeding, foraging, and sheltering habitat for many wildlife species. The

WMA also supports species important for hunting and wildlife viewing, such as mule deer (*Odocoileus hemionus*), wild turkey (*Meleagris gallopavo*), chukar partridge (*Alectoris chukar*), beaver (*Castor canadensis*), waterfowl, and raptors. Most of the WMA, including the riparian area, is considered critical or high priority mule deer winter range.

**Federal Threatened, Endangered and Candidate Species**

The following species are federally listed as either threatened, endangered or candidate species that may occur in Piute County, Utah.

**Table 4. Federally listed species that may occur in Piute County, Utah.**

| Common Name | Scientific Name | Status |
|---|---|---|
| Bald Eagle | *Haliaeetus leucocephalus* | Threatened |
| Utah Prairie Dog | *Cynomys parvidens* | Threatened |
| Yellow-billed Cuckoo | *Coccyzus americanus* | Candidate |

Bald eagles may occur in the project area only during winter where they may roost in large trees or on rocky cliffs and points. Utah prairie dogs or past evidence of their existence (e.g., old burrows) have not been found at or near the project site. Yellow-billed cuckoos have not been observed in the area. They are a riparian habitat obligate species but are usually found in lowland cottonwood/willow habitats with a dense sub-canopy. The density of the riparian sub-canopy in the project area is low; therefore, yellow-billed cuckoos are not expected to occur in the area.

**Archaeological, Cultural and Historical Resources**

A qualified archaeologist has completed a field survey for archaeological, cultural and historical resources within the project area and none were found. A search of the Utah State Historical Preservation Office (SHPO) inventory database indicated that none were known to occur at the project site. A written report has been submitted to SHPO to receive clearance that no archaeological, cultural and historical resources will be impacted by the project.

## ENVIRONMENTAL CONSEQUENCES

### Alternative A

Soils

A minor amount of soils will be washed downstream during construction of a new channel, shaping of vertical banks, and building in-stream habitat structures. The resulting increase in turbidity may reduce the ability of fish to forage effectively due to diminished visibility of prey. However, this effect will be temporary and minor and is not expected to affect the viability of the fishery in the stream. The long-term soil-related effects of the project would be to substantially reduce bank erosion and sedimentation of the stream and improve water quality. No negative impacts are expected downstream on other landowner properties.

No prime or unique farmlands will be impacted by the project, because none occur on or adjacent to the project site.

Hydrology and Floodplains

The stream channel will have width, depth, slope and sinuosity dimension, pattern and profile restored that are more natural for the existing valley type, slope, variable flow discharges and environmental conditions. The stream will be able to convey sediment inputs, floodwaters, irrigation flows, and low flows, and maintain the natural hydrologic processes that provide for ecological, biological and fishery functions.

Installation of rock and log vanes, root wads, cover logs, juniper tree revetment, erosion control fabric; building floodplains; and establishment and regrowth of woody riparian vegetation will minimize bank erosion, stabilize banks, and maintain natural stream width and depth ratios. More floodplain area will be created, and with the removal of berms, the stream will be able to fully utilize all floodplains. The stream treatments will not raise flood heights or frequency. Increased floodplain area, stable banks and improved riparian vegetation can help lower flood stages, decrease flow velocity, filter nutrients, trap sediment, and recharge groundwater.

Wetlands

There will be some disturbance to floodplain wetlands and high-flow side channels during the construction period, mainly from heavy equipment traveling across the floodplains. Approximately 0.2 acre of floodplain wetlands will become the new stream channel in Phase 1. Wetlands along the stream banks will be altered during construction, but will be expanded and improved with better vegetation following completion of the project. Approximately 1.8 acres of new floodplain wetlands will be created by removing dirt berms, building floodplains on the insides of the new meanders and by sloping back vertical eroding banks. Disturbance to floodplain wetlands will be minimized by confining work activities and equipment to the smallest area possible. There will be no permanent negative impacts to floodplain wetlands.

By supplying year-round surface water to the old abandoned stream channel, the wetland will be greatly enhanced and provide better wildlife habitat on 0.9 acre of existing wetland. The enhanced wetland habitat is expected to increase likelihood of amphibian reproduction.

The old side channel, proposed for excavation to create a backwater area connected to the stream, is currently a floodplain type wetland. This wetland will be converted to a 1- to 2-foot deep standing water wetland. The water flowing through the old abandoned stream channel wetland will drain into this backwater and then into the stream. The backwater area will be 0.1 acre in size. The backwater area will be created only if water flow through the old abandoned stream channel wetland can be established. Without water flow washing through this area, sedimentation is likely to occur,

The excavated backwater area would replace 0.1 acre of existing floodplain wetland. The new backwater area would provide breeding, sheltering, and foraging habitat for trout and native fish. The small amount of wetland loss would be more than compensated by the amount of wetland restoration in Phase 1.

Vegetation

A maximum of 2 acres in Phase 1 and 4 acres in Phase 2 would be disturbed from project activities. Disturbance will be minimized by confining activities and equipment to the smallest areas possible. Disturbance to vegetation would be temporary until native vegetation from reseeding is established.

Some vegetation in the riparian zone will be disturbed and impacted. Removal of willows and other woody riparian vegetation will only occur where necessary for construction of the new stream channel and shaping of stream banks. Most of the willows or other woody vegetation removed will be saved and replanted along the new channel, stream banks and floodplains. No cottonwood and box elder trees larger than 15 feet tall will be removed.

Minor disturbance, removal or covering of upland vegetation of sagebrush and rabbitbrush will occur as a result of burial of old car rip-rap and spreading out of excess excavated soils. Long-term impacts to upland habitat are not likely to occur, because these areas will be reseeded with an appropriate upland native seed mixture, monitored annually, and invasive non-native vegetation controlled.

Because all stream banks and disturbed riparian and upland areas will be reseeded with native vegetation and the area will be monitored annually, the likelihood of establishment of invasive vegetation will be low.

The amount, density, and diversity of riparian vegetation will be significantly improved over time with the removal of livestock grazing and planting of new vegetation. Wetland vegetation in the old stream channel will also improve with a year-round supply of water.

Fisheries and Wildlife

The proposed stream work will increase the quantity and quality of breeding, foraging, and sheltering habitat for fish, with an expected corresponding increase in trout biomass from 33 to 55 pounds per acre up to at least 100 pounds per acre. By increasing stream length and the amount of trout habitat, an overall increase in the population of trout is expected. Healthy population numbers of native non-game fishes are expected to be maintained or increase as well. The new backwater area will provide additional habitat for young trout and native fish.

The Division has been monitoring for potential impacts to leatherside chub numbers from the stocking of brown trout. The Division has obtained population estimates of leatherside chubs and brown trout from three stations within and two areas outside the project site. Preliminary results indicate that increased numbers of brown trout are not affecting numbers of leatherside chubs, as all stations with high numbers of brown trout also had high numbers of leatherside chub while stations with low numbers of brown trout had correspondingly low numbers of leatherside chub. Improved habitat availability, structure, and complexity from the proposed project may provide more refugia for leatherside chub, allowing sustained population numbers that would not be affected by increases in brown trout numbers. The Division will continue to monitor these species after the proposed project is completed.

The improved riparian habitat and wetlands will also benefit many neotropical migrant song birds, small mammals and amphibians by increasing the quantity and quality of breeding, sheltering, and foraging habitat. Waterfowl, Rio Grande turkey and wintering mule deer will benefit from the improved vegetation. No impacts to critical deer winter range will occur.

Federal Threatened, Endangered and Candidate Species

Bald eagles are very rarely observed in the project area and these observations only occur in winter when they may roost. No effects to bald eagles would be expected because no nesting sites are known to occur in the project area and no trees large enough for roosting will be destroyed. Noise and human presence

during work activities are unlikely to negatively affect bald eagles, as other available roosting sites for bald eagles nearby are plentiful.

No effects to the Utah prairie dog would be expected because they do not occur in the project area.

Yellow-billed cuckoos have not been observed in the project area and are not likely to occur there due to the lack of appropriate riparian sub-canopy. Furthermore, yellow-billed cuckoos are unlikely to be within the project area during construction activities from mid-October through November. They migrate from South America and arrive in Utah in extremely late May or early June and breed in late June through July. They typically start their southerly migration by late August or early September.

Archaeological, Cultural and Historical Resources

No evidence of archaeological, cultural and historical resources were found during the field survey of the project area and research of the Utah State Historical Preservation Office database; therefore, no impacts are expected.

Recreation

Angling opportunities would be temporarily interrupted on and downstream from the project site during construction. However, plentiful angling opportunities will continue upstream from the project site during that time period.

The Kingston Canyon WMA is situated in a quiet and aesthetically pleasing environment. The setting and an increase in trout populations resulting from the completed project will provide an improved high-quality angling opportunity for the public. Wildlife viewing opportunities would also be enhanced and enjoyed by the public.

**Alternative B**

The environmental consequences associated with Alternative B would be the same as those described for Alternative A with the following exceptions.

Wetlands and Wildlife

The wetlands would remain as they currently exist. Because no pipeline would be installed to supply water to the old abandoned stream channel, the wetland would not have surface water year-round and the value for wildlife habitat would not be improved. Suitable breeding habitat for amphibians and waterfowl would continue to not be available in the project area. Because the pipeline would not be installed and there would be no water flow year-round, no purpose would be served to excavate the 0.1-acre backwater area in the old side channel, which would deprive young trout and native fish of habitat for sheltering and foraging.

**Alternative C**

The environmental consequences of Alternative C would be the same as those associated with Phase 1 of Alternative A. The following describes impacts that would occur as a result of not implementing Phase 2 of Alternative A.

Soils

Stream bank below the project site for Alternative C would continue to erode and sedimentation would continue to occur. The temporary effects of the small amount of soil loss and sedimentation associated with Phase 2 construction would not occur.

Hydrology and Floodplains

Because stream banks would not be stabilized for 2,200 feet of the lower stretch associated with Phase 2 of Alternative A, water quality of that stretch would not be improved. This stretch would continue to experience reduced hydrologic functions, including insufficient floodplains needed to keep flood stage levels low and recharge groundwater.

Wetlands

Floodplain wetlands in that stretch would not be increased.

Vegetation

Because reseeding of native vegetation along the stream banks of the 2,200-foot downstream section would not occur, erosion would continue resulting in increased potential for establishment of invasive non-native vegetation. Riparian vegetation would continue to be absent along this stretch.

Fisheries and Wildlife

Without the opportunity for establishment of riparian vegetation, suitable habitat for fish and wildlife would continue to be unavailable in this stretch.

Federal Threatened, Endangered and Candidate Species

The environmental consequences on federal threatened, endangered and candidate species would be the same as those described for Alternative A.

Archaeological, Cultural and Historical Resources

The environmental consequences on archaeological, cultural and historical resources would be the same as those described for Alternative A.

Recreation

Because habitat would not be improved and trout populations would not substantially increase in this section of stream, this area would not enhance recreational opportunities for anglers and wildlife viewers.

**Alternative D**

Soils

The environmental consequences on soils would be the same as those described for Alternative A, except less overall short-term sedimentation may occur because the amount of excavation associated with recreating meanders in Phase 1 would not occur.

Stream banks would be stabilized and erosion reduced or eliminated along the both stretches.

Hydrology and Floodplains

The natural stream channel geomorphology pattern and profile for the Phase 1 stream section would not be restored. Because meanders would not be created, stream length would not be increased. Hydrologic processes that provide for ecological, biological and fishery functions would be reduced, i.e., there would continue to be insufficient floodplain area; low flood stage levels; and inadequate flow velocity, filtering of nutrients, trapping of sediment, and groundwater recharge.

However, because bank stabilization and erosion control associated with Phase 2 would be extended upstream, this stretch would benefit from improved water quality.

Wetlands

The environmental consequences to wetlands would be the same as described for Alternative B.

Floodplain-type wetlands would not be available in the upper stretch, because creating floodplains in part of the low terrace, associated with Phase 1, would not occur.

Vegetation

The environmental consequences on vegetation associated with Alternative D would be the same as those described for Alternative A, with the following exceptions. Part of the low terrace would not be changed to floodplains; thus, associated floodplain wetland vegetation would not be established. Because a pipeline would not be installed to provide water to the old stream channel and the backwater would not be excavated, high-quality wetlands and wetland vegetation would continue to be absent. Short-term effects to upland habitat would not occur, because old car rip-rap would not be removed and buried and there would be no excess soil to dispose.

Fisheries and Wildlife

Habitat improvements associated with Phase 2 activities, such as increased riparian vegetation in previously eroded areas and where floodplains are recreated, would occur over both stretches of the project area. However, because stream length would not be increased by recreating meanders, the amount and quality of trout habitat in the upper stretch of the stream would remain relatively low. As a consequence, the overall trout and native non-game fish population would not increase as much as likely in Alternative A.

Effects to fish and wildlife associated with the abandoned old stream channel and old side channel would be the same as described in Alternative B.

Federal Threatened, Endangered and Candidate Species

The environmental consequences on federal threatened, endangered and candidate species would be the same as those described for Alternative A.

Archaeological, Cultural and Historical Resources

The environmental consequences on archaeological, cultural and historical resources would be the same as those described for Alternative A.

Recreation

Enhanced angling opportunities for the public would be similar to Alternative A, however, there would be fewer trout and less stream length available for fishing. Wildlife viewing opportunities in the old abandoned channel wetlands would remain relatively low.

**Alternative E**

Because no work would be conducted on either stretch of the stream, the benefits and negative impacts described in Alternatives A through D would not occur.

**Table 5. Summary of Environmental Consequences Matrix**

| Affected Component | Alternative A | Alternative B (Compared to A) | Alternative C (Compared to A) | Alternative D (Compared to A) |
|---|---|---|---|---|
| Soils | Minor amount of soil washed downstream; temporary reduction in water quality. Long-term reduction in soil erosion. | Minor amount of soil washed downstream; temporary reduction in water quality. Long-term reduction in soil erosion. | Lesser amount of soil washed downstream. Soil erosion from stream banks would continue on 2,200 ft of stream. | Minor amount of soil washed downstream; temporary reduction in water quality. Long-term reduction in soil erosion. |
| Hydrology and Floodplains | Restore natural channel dimension, pattern and profile, and hydrologic functions. Stabilize stream banks. Create 1.8 ac of new flood-plain area. Long-term improvement of water quality. | Restore natural channel dimension, pattern and profile, and hydrologic functions. Stabilize stream banks. Create 1.8 ac. of new flood-plain area. Long-term improvement of water quality. | 2,200 feet of stream not restored to natural channel dimension, pattern and profile, and hydrologic functions. 2,200 feet of stream banks not stabilized; continued degraded water quality. Create 0.95 ac. of new floodplain area. | Natural channel dimensions restored, but not pattern and profile on upper stretch. Stream length not increased. Less benefits of hydrologic functions. Water quality improved in both stretches. 1.2 ac. new floodplains created. |
| Wetlands | 0.3 ac. of floodplain wetlands converted to new stream channel and backwater. 1.8 ac. of new floodplain wetlands created. 0.9 ac. of existing wet-lands enhanced with year-round water. | 0.2 ac. of floodplain wetlands converted to new stream channel. 1.8 ac. of new floodplain wetlands created. 0.9 ac. of existing wetlands not enhanced. 0.1 ac. backwater not created | 0.3 ac. of floodplain wetlands converted to new stream channel and backwater. 0.95 ac. of new floodplain wetlands created. 0.9 ac. of existing wet-lands enhanced with year-round water. | 1.2 ac. of new floodplain wetlands created. 0.9 ac. of existing wetlands not enhanced. 0.1 ac. of backwater not created. |
| Vegetation | Temporary minor disturbance to upland and riparian vegetation during construction. Long-term density and diversity of riparian vegetation improved. Enhanced wetland vegetation. | Temporary minor disturbance to upland and riparian vegetation during construction. Long-term density and diversity of riparian vegetation improved. Wetland vegetation not enhanced in old stream channel areas. | Temporary minor disturbance to upland and riparian vegetation during construction. Enhanced wetland vegetation in Phase 1 area. No improvement of riparian vegetation on the Phase 2 section of stream. | Temporary minor disturbance to upland and riparian vegetation during construction. The amount, density and diversity of riparian vegetation improved. Wetland vegetation not enhanced in old stream channel areas. |

**Table 5. Summary of Environmental Consequences Matrix (continued)**

| **Affected Component** | **Alternative A** | **Alternative B** (Compared to A) | **Alternative C** (Compared to A) | **Alternative D** (Compared to A) |
|---|---|---|---|---|
| Fisheries and Wildlife | Increase trout biomass from 33-55 lb/ac to over 100 lb/ac. Native non-game fish numbers maintained or increased. Improved breeding, sheltering, foraging habitat for wildlife in riparian and wetland areas. | Increase trout biomass from 33-55 lb/ac to over 100 lb/ac. Native non-game fish numbers maintained or increased. Improved breeding, sheltering, foraging habitat for wildlifein riparian areas. No improved wetland habitat in old stream channel area. | Overall trout population would not increase in the Phase 2 stream section. Phase 1 stream section increase in trout biomass to over 100 lb/ac. Improved breeding, sheltering, foraging habitat for wildlife in wetland areas. Less improvement in riparian habitat. | Less stream length, amount and quality of trout habitat created, so lower overall increase in trout numbers. Less breeding, sheltering, foraging habitat for wildlife habitat in wetlands enhanced. |
| Federal Threatened, Endangered and Candidate Species | No impacts. Improved riparian habitat if yellow-billed cuckoo present. | No impacts. Improved riparian habitat if yellow-billed cuckoo present. | No impacts. Some improved riparian habitat if yellow-billed cuckoo present. | No impacts. Improved riparian habitat if yellow-billed cuckoo present. |
| Archaeo-logical, Cultural and Historical Resources | No impacts. | No impacts. | No impacts. | No impacts. |
| Recreation | Enhanced high quality angling opportunities and wildlife viewing for the public. | Enhanced high quality angling opportunities and wildlife viewing for the public. Less wetland wildlife viewing available. | Quality angling and wildlife viewing opportunities would be less. | Quality angling and wildlife viewing opportunities would be less. |

## Coordination and Consultation

The Division has submitted an application for a streambed alteration for Phase 1 activities to the Utah Division of Water Rights. The Kingston Irrigation Company and the Sevier Valley Irrigation Company have had the opportunity to review the proposed project through the permit approval process.

The Division has also submitted an application for a wetland fill permit to the Division of Water Rights, pursuant to Section 404 of the Clean Water Act. The U.S. Army Corps of Engineers will review the permit application in coordination with the Division of Water Rights.

The Division has coordinated with the BLM to obtain approval for work on a small portion of property it owns within the project area.

The Division has obtained permits from the Utah Division of Oil, Gas, and Mining and SITLA to harvest rock from SITLA property.

## Public Notice

A public notice of the availability of a draft EA was published by the U.S. Fish and Wildlife Service, Region 6, Denver, Federal Assistance Office in area legal newspapers and on the Service's website not later than September 15, 2004, requesting comment on the proposed activities by October 15, 2004. We also sent the public notice by electronic mail or facsimile transmission to several potentially interested parties. We received one letter in response. A copy of the letter and our response to the comments are in Appendix A.

Figure 1. Location of stream restoration and trout habitat enhancement project on the Kingston Canyon WMA in Piute County, Utah.

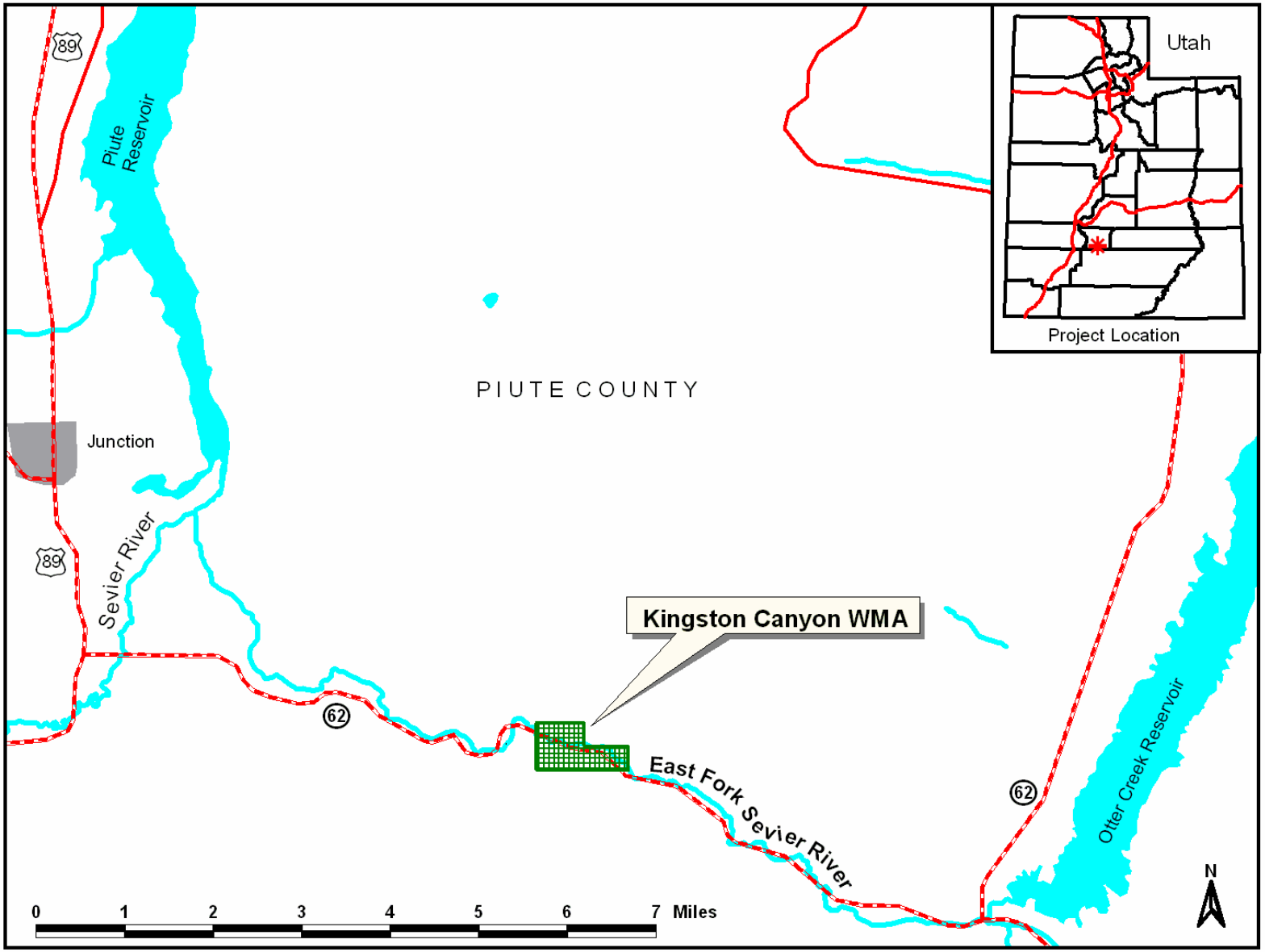


Figure 2. Plan diagram for Phase 1 of Alternative A.

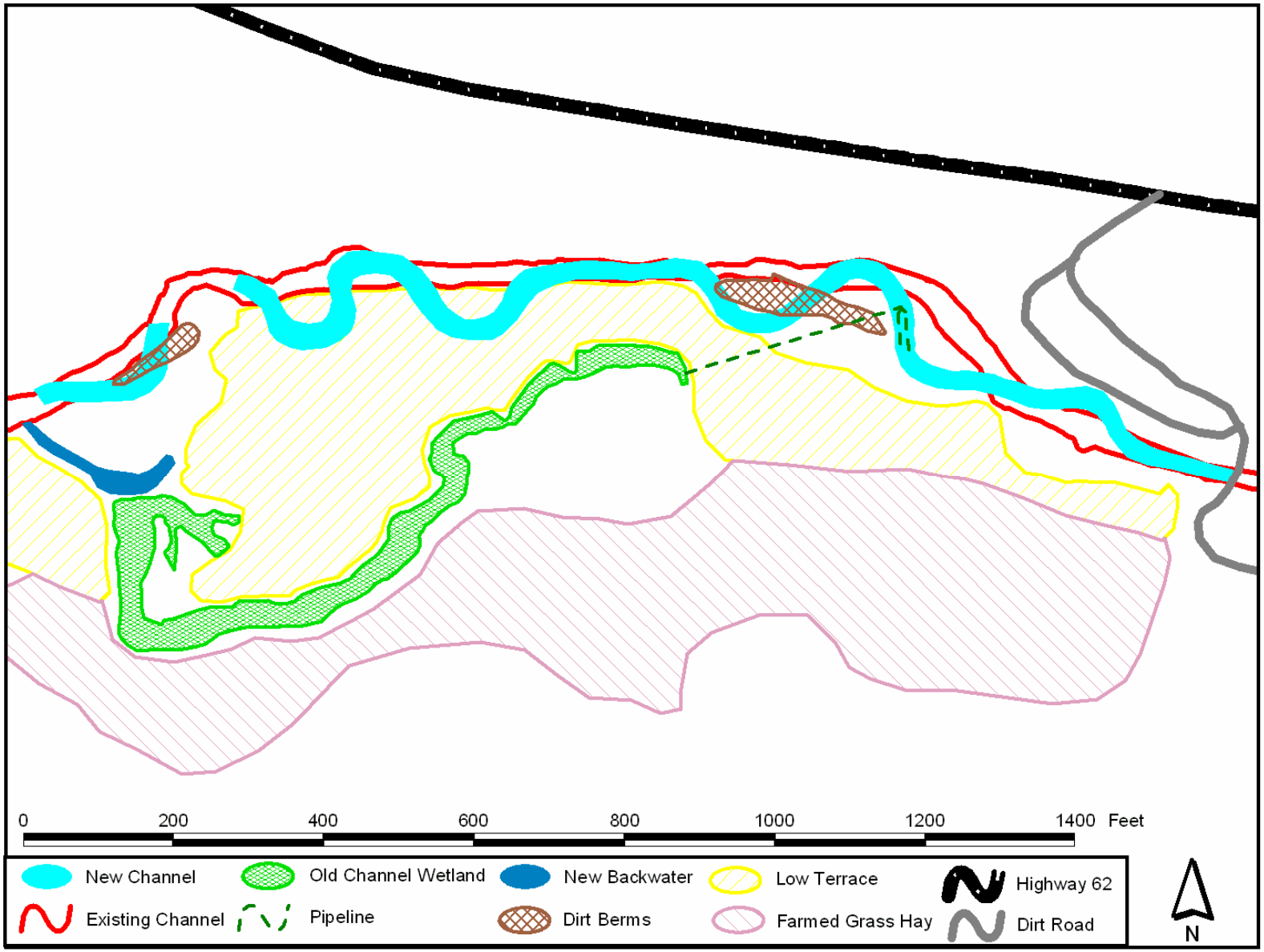


Figure 3. Rock vane used for bank protection, with J-hook for additional fish habitat.

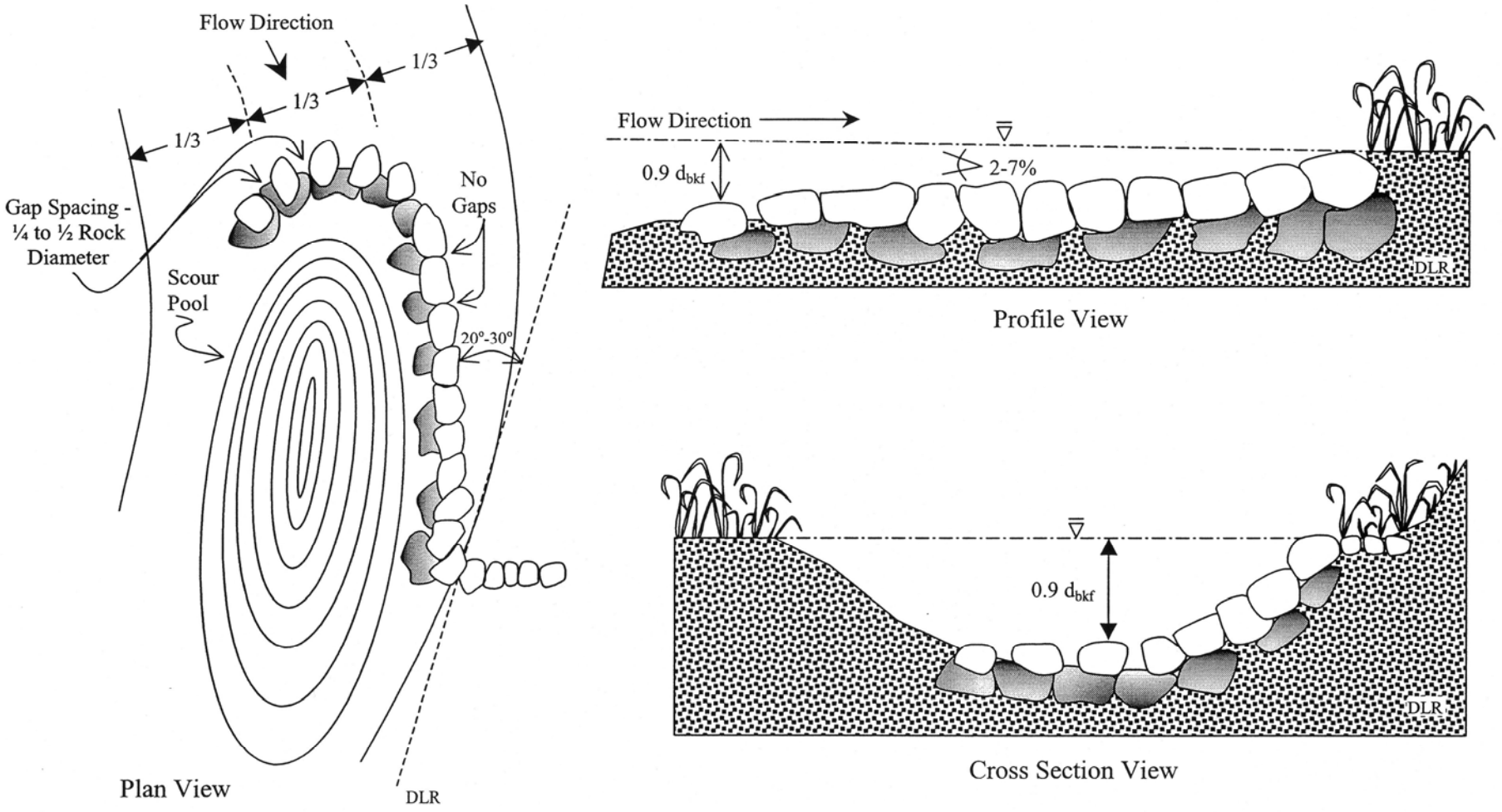
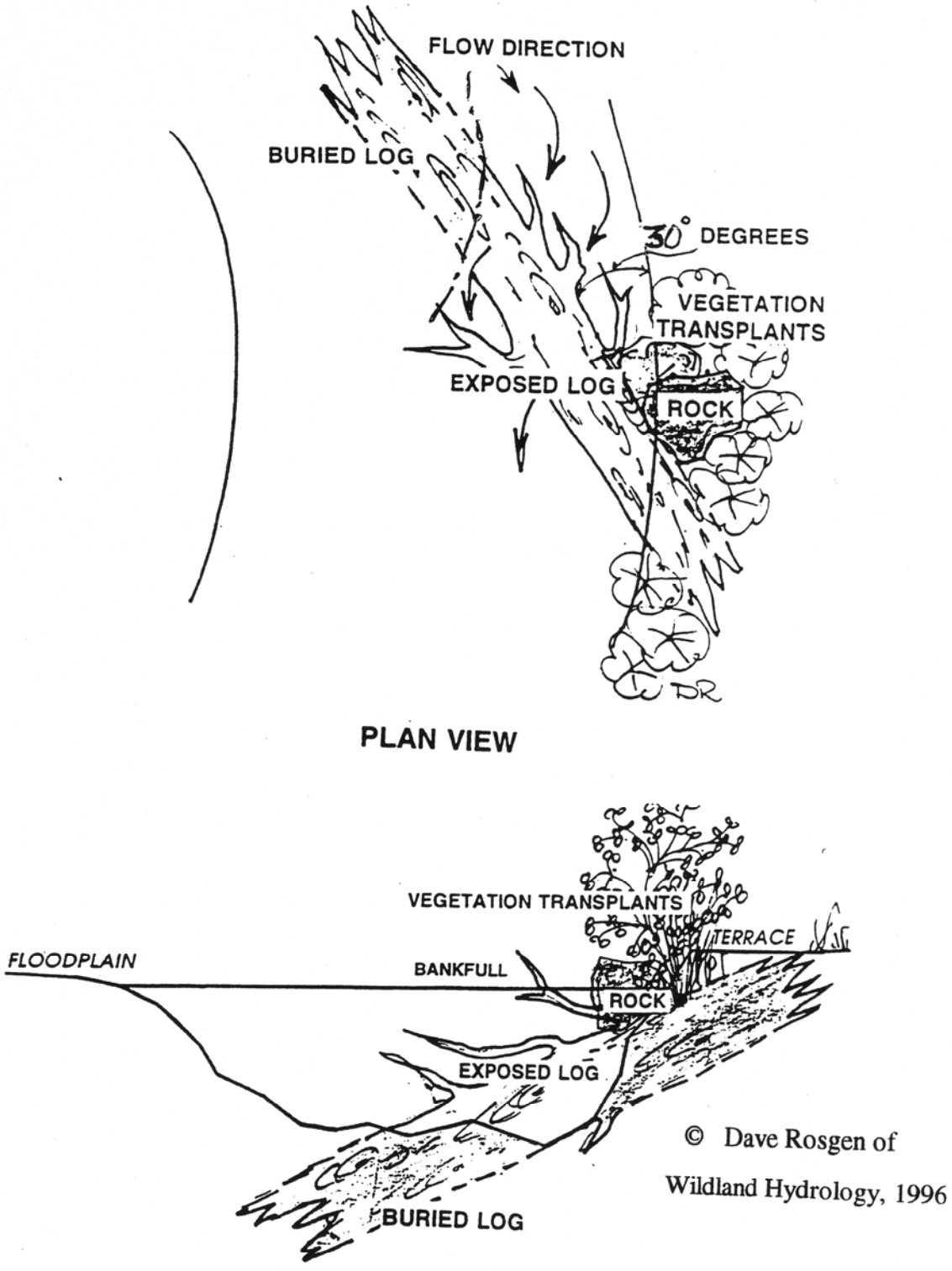



*Figure 6. Plan, profile, and section view of the J-Hook vane*

Figure 4. Log vane for bank stabilization and fish habitat.




PLAN AND CROSS-SECTION VIEWS OF THE BANK LOG (VANE) STRUCTURE.

Figure 5. Juniper revetment installed for bank stabilization and fish habitat.

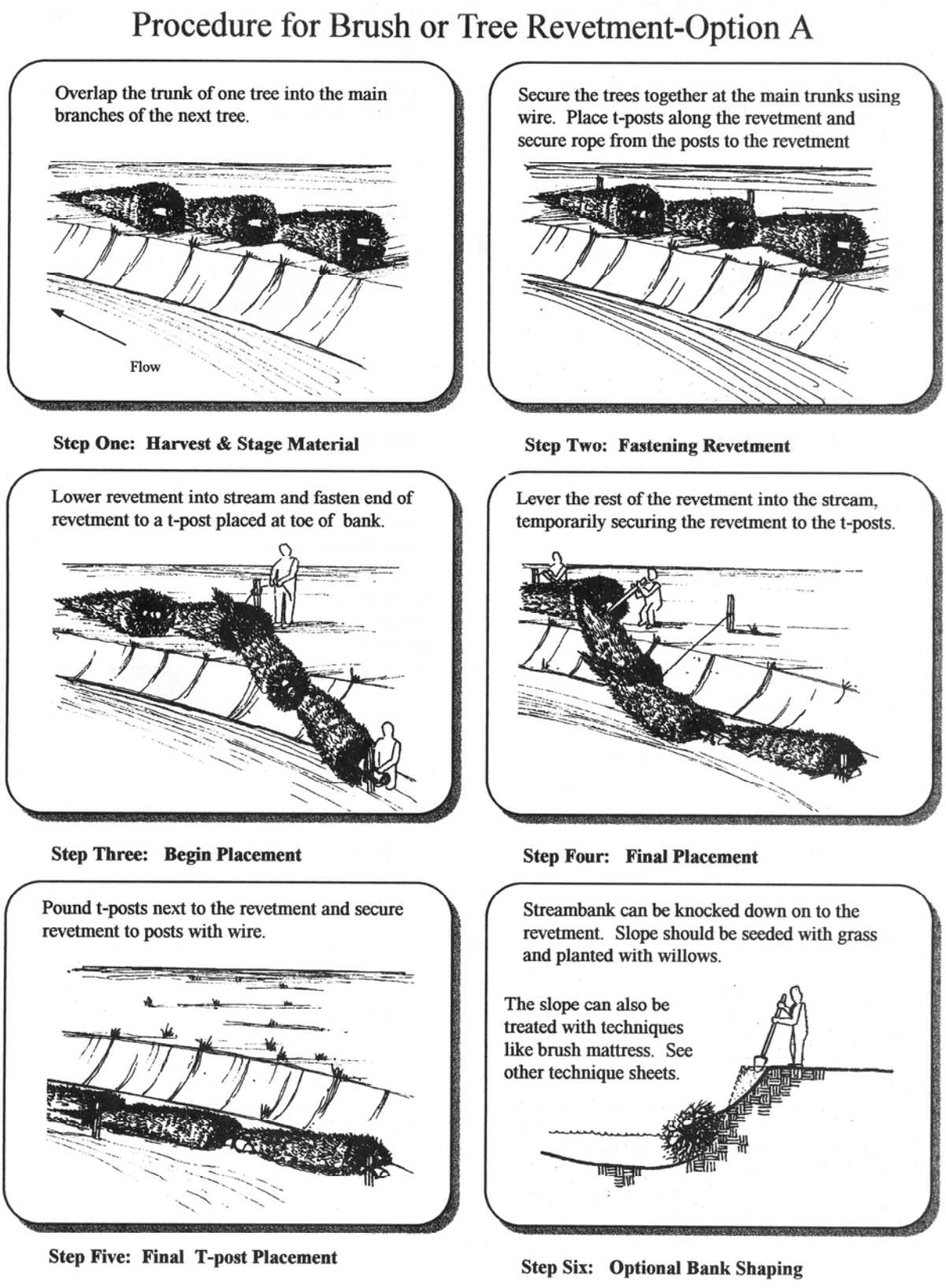


Figure 6. Erosion control fabric for bank protection until vegetation is established.

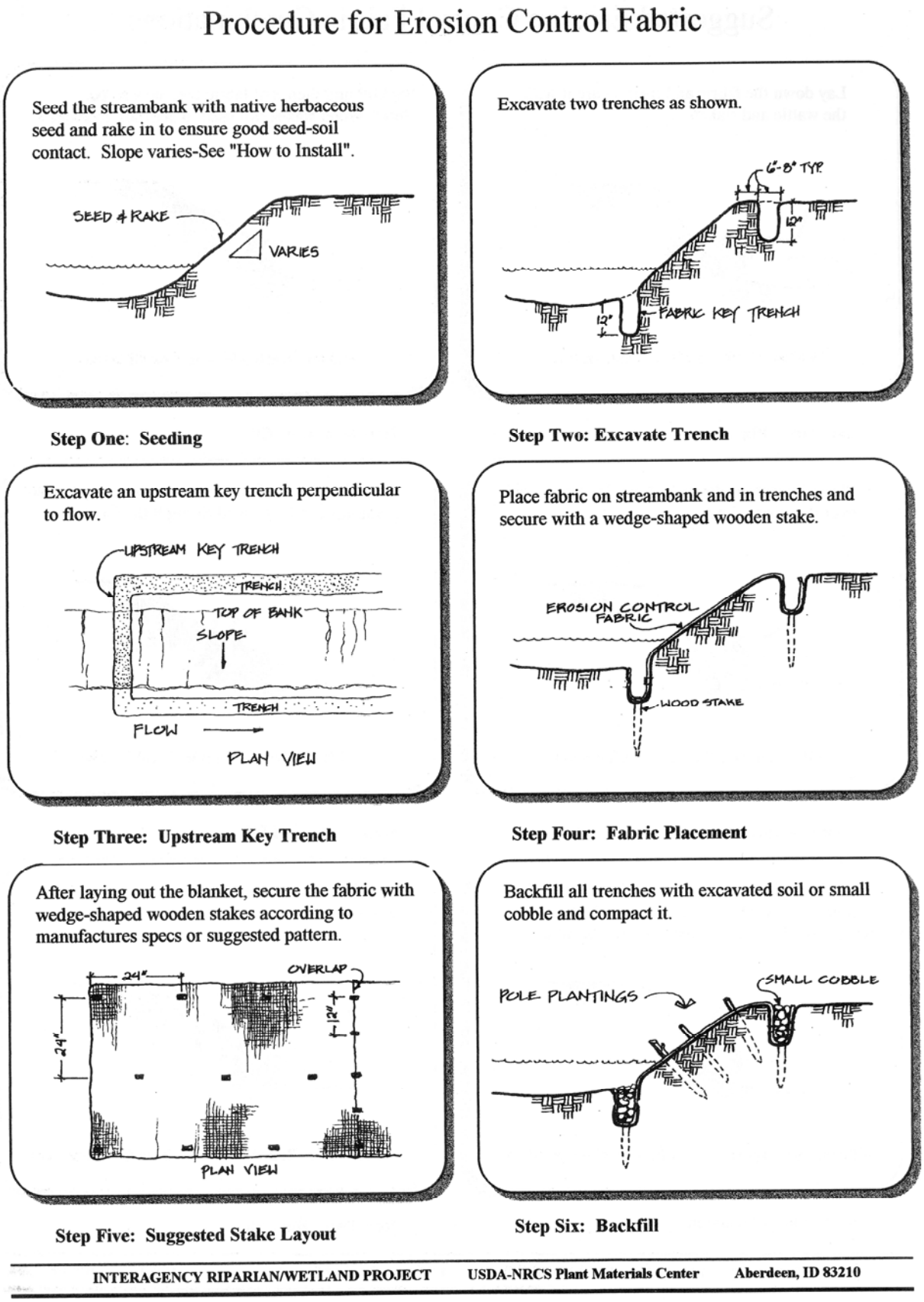
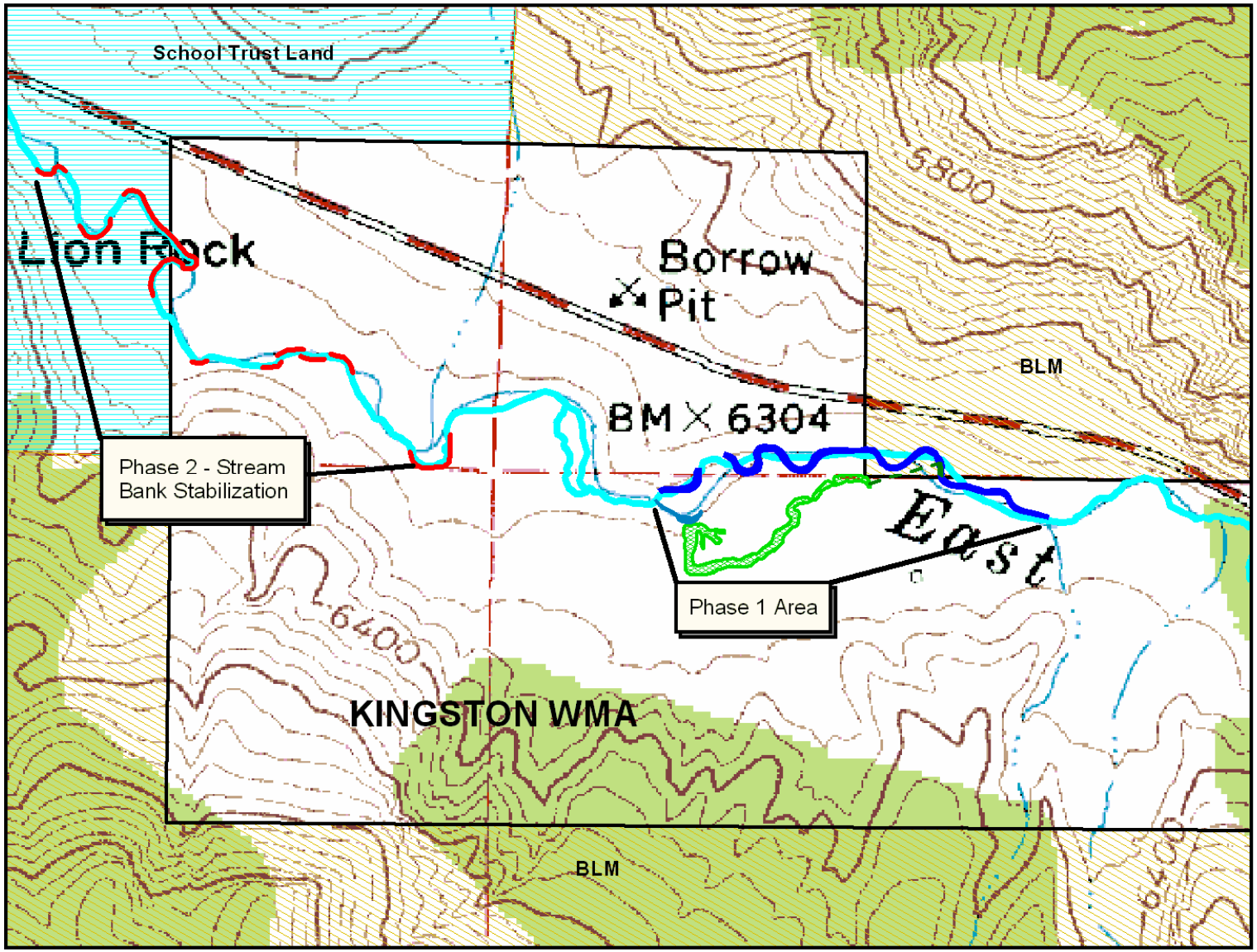


Figure 7. Stream bank stabilization area of Phase 2 of Alternative A.



# APPENDIX A

**Contents:**

1. Copy of comment letter from J. Dwight Poffenberger, Jr., Esquire
2. Responses to comments from J. Dwight Poffenberger, Jr., Esquire

**J. Dwight Poffenberger Jr., Esquire**
**2700 Carew Tower**
**441 Vine Street**
**Cincinnati, OH 45202**
**513-241-2324**
**dpoffenberger@whepatent.com**
September 22, 2004

Chief
Division of Federal Assistance
U.S. Fish and Wildlife Service
P.O. Box 25486
Denver, CO 80225

Dear Chief:

I have the following comments regarding the proposal to Improve Trout Habitat on the East Fork Sevier River in the Kingston Canyon Wildlife Management Area..

I urge you to not allow any grazing of livestock along stream banks. Use federal funds to keep the livestock out of the river.

My recommendation is to conduct Phases 1 and 2. However, I would avoid using any pipes. Plant trees instead. Let the river flood naturally.

I recommend no fishing or walking at all in the river during the spawning season and for a little while after spawning has ended.

Reduce daily harvest levels in the river. Make it catch and release.

Modify stocking policies to protect wild trout.

Please place me on all mailing lists regarding this action. If you have any comments or questions, please contact me.

Very truly yours,

J. Dwight Poffenberger Jr.

J. Dwight Poffenberger Jr., Esq.

K:\user\Jdpj\Sevier River comments.wpd

**Responses to comments from J. Dwight Poffenberger, Jr., Esquire**

Grazing

The property had been routinely grazed by livestock before the Utah Division of Wildlife Resources (UDWR) purchased the property in August 2003. UDWR eliminated livestock grazing from the property after it was purchased. No livestock grazing will occur within the project area for 4 or 5 more years while newly planted vegetation is established. After that time, UDWR may allow a limited amount of livestock grazing while controlling and monitoring it to ensure that no detrimental impacts to riparian vegetation and wildlife habitat would occur.

Pipeline Installation

Natural flooding of the river would not maintain year-round water in the wetland of the old stream channel. When low stream flows occur during the winter and early spring no water exists in the wetland because it is not connected to the stream channel and is separated from the river by terraces. The only reasonable method to move water from the stream to the wetland during low flows is through a buried pipeline.

Spawning Season Activities

This issue is outside the scope of the proposed project. However, to clarify, the Division has stated that enforcing a restriction on fishing or walking in the stream during any specific portion of the year, such as the spawning season, is not feasible due to limited resources and other priorities. In addition, the minor amount of walking in the stream that may occur during spawning would have no impact on the limited amount of spawning that may normally occur in this area. Therefore, regulating recreational activity during the spawning season in this area is not necessary. Furthermore, it would not benefit the fishery, would diminish the quality of fishing opportunities anglers during spawning periods, and is not feasible to implement.

Harvest Levels

This issue is outside the scope of the proposed project. However, to clarify, the Division has stated that it has established four trout population monitoring stations on the Kingston Wildlife Management Area (WMA). The Division will periodically resurvey these stations to monitor trout numbers, size and condition. The Division will use this data to make management decisions and implement the best method to maintain a quality trout fishery on the Kingston WMA as needed in the future.

Stocking Policies

This issue is outside the scope of the proposed project. However, to clarify, the Division has stated that sediment from sources upstream of this section of the East Fork Sevier River receives cover and suffocate most fish eggs. As a result, almost no natural

reproduction of trout occurs in the river. The Division maintains the trout fishery in the river by stocking fingerling trout.