

SCOTT RIVER

LANDOWNER RIPARIAN PLANTING PROJECT:

A RIPARIAN IMPROVEMENT PROJECT

AGREEMENT # 14-48-11333-7-J174

PROJECT IDENTIFICATION # 97-PARTNERS-02

Project completed by:  
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**Abstract:** The Scott River has been listed as impaired by the North Coast Regional Water Quality Control Board (NCRWQCB) due to warm water temperatures and excessive sediment. One of the many sources of warm water temperatures and increased sedimentation is the lack of riparian zone along the stream banks. Enhancement of the riparian area can also aid to reverse the degraded condition and improve in-stream conditions. Established riparian areas along streams can stabilize stream banks, trap and hold sediment, reduce excessive active channel widths, increase moisture holding content of the soil and improve in-stream conditions. The Siskiyou RCD and Scott River CRMP Council have identified the establishment of a contiguous riparian corridor along fish bearing streams as one of the keys to enhancing anadromous habitat conditions within the watershed and improving water quality conditions.

The completion of the Scott River Landowner Riparian Planting Project aided in our goal of establishing riparian tress along the tributaries and the main stem of our watershed. The RCD planted over 11.5 acres of riparian plantings in five different locations throughout the watershed. The property owners helped in the planting process which reduced cost and encouraged the property owner to monitor and maintain the plantings. Several property owners have become very interested in their riparian plantings and their well being. This fosters an interest and responsibility to the riparian areas. We intend to continue the project objectives because we are satisfied with the results and the landowner response.

**BACKGROUND:** The Siskiyou Resource Conservation District (RCD) is a special district ran by a board of property owners who are addressing the issues related to resource use within the Scott River watershed. The RCD has focused mainly on the floor of Scott Valley which has been dominated by agricultural use for over 130 years. Agriculture within Scott Valley focuses on beef cattle, wheat and alfalfa production. The Siskiyou RCD searches for project designs which conserve the use of resources as well as improve management of property and livestock. We have found that projects which serve mutual benefits or, at least no negative impacts to the property owner are permanent projects as the property owner is eager to take over the required maintenance.

The current issue related to resource use revolves around anadromous fisheries and watershed health. The population of anadromous fisheries has generally declined throughout the Pacific Northwest during the past several decades. Academia has found that water quality is one of the limiting inland factors related to declining salmonid populations. The North Coast Regional Water Quality Control Board (NCRWQCB) has listed the Scott River as having two non-point source water quality impairments: excessive sediment and temperature levels at certain periods of the year. The CRMP and the RCD have identified contiguous riparian establishment as a viable treatment for both impairments as well as a necessary ingredient in anadromous habitat.

Riparian corridors within the Scott River watershed have been reduced by gold mining, timber harvest, development, government programs, agriculture, fire, and riparian diseases. All the factors have been documented in the watershed. Recent awareness of the importance of riparian corridors to fisheries and the benefits to the property owner have increased the popularity of riparian planting in the Scott River watershed. Approximately 160 acres of riparian area has been planted along the Scott River and its tributaries in an effort to improve in-stream conditions. Some planting locations and techniques have been failures while others have survival rates of over 93%. We have noticed that landowners who generate an interest in their riparian plantings increase survival rates and provide needed maintenance. Under the Scott River riparian Planting Project, we targeted those property owners and solicited their help.

There are two reasons we feel the Scott River Landowner Riparian Planting Project is an important step in meeting our riparian goal. The first is that attentive property owners increase planting success due to their involvement and commitment. The second is this program allows planting to occur in outlying areas where riparian revegetation has not occurred. The RCD has found that successful project implementation with one property owner allows neighboring property owners to review the project, observe its mutual benefits, and participate in a similar project at a later date. The RCD and CRMP have numerous examples of this taking place. As more property owners see the benefits of established contiguous riparian areas, a large project can take place using what was learned from the original Landowner Riparian Project.

**OBJECTIVE:** The scope of the Scott River Landowner Riparian Planting project was to plant 9.5 acres. We ended up planting approximately 11.5 acres. The riparian trees are planted with a back-hoe along the stream bank, high gravel bars and terraces. The use of a back hoe allows us to plant the cuttings and rooted stock as deep as the estimated summer moisture layer. This ensures a reduction in maintenance (less need for irrigation) as well as mortality. First year growth usually exceeds two feet and possess over four major branches (stems) while two year old trees are often over four feet and up to twelve feet tall. The RCD has increased planting success by determining the characteristics of good planting stock and planting locations and density.

The major focus of the Scott River Landowner Riparian Restoration Project is establishing a riparian area. The benefits of a riparian corridor are many. Riparian areas trap sediment, provide shade and cover, and the root structure provides added strength to the soil and increases the water holding capacity. Our goal with the riparian area was to reduce the width of the active channel over time. Once the active channel width is reduced, the ability of the channel to move bed load will increase. As the channel reaches equilibrium with the sediment load, it will become more stabilized with a single defined thread.

The planting method is rather severe initially, but the results have been very good. The RCD cuts large rooted stock from willow species (Pacific Willow and Arroyo Willow) and from Black Cottonwood. The cuttings are usually no more than 2.5" in diameter yet may be as long as 12 feet. The cuttings are transported to the site and buried using a back hoe or pick-up. The RCD uses a back-hoe to dig holes in order to place the cuttings at an elevation deep enough to be in contact with the summer water table. The density of the plantings using the pole stock method averaged around 150-210 trees per acre, depending on the site conditions and the intent of the planting.

#### **PROJECT ACCOMPLISHMENTS, SITE CONDITIONS AND SUCCESS:**

The RCD planted 11.5 acres in five different locations. The site conditions were extremely different as were the success rates. The accomplishments and site conditions can best be broken down by each site:

##### **Site 1:**

Location: Main stem of the Scott River near center of Scott Valley. This location is within the reach of the Scott River which was channelized, straightened and levees were installed by the Army Corps of Engineers (1938). Since then, the sinuosity of the stream has increased and silt/loam deposits have made some nice, yet non-contiguous areas for planting. Approximately two acres of Pacific Willow, Black Cotton wood and red willow cuttings were planted during the late winter of 1998.

Specific Site Conditions:

**Low Flow Water Table Elevation:** The estimated low water table depth is about 7-9 feet below the soil surface. The depth is pushing the limit with red willow but pacific willow and cottonwood should establish.

**Plant Competition:** There is excessive annual growth, much of it is noxious - Star Thistle, Canadian Thistle and hemlock. Through experience, we know riparian trees get out competed by noxious weeds. Our goal was to plant the willows deep enough to access the water table and avoid competing with the annual weeds on the surface layers.

**Soil Condition:** The condition of the soil was excellent. There was a hard clay layer at about 10 feet but that was not going to affect us. The soil was a fine loam deposited by high flows.

**Wildlife Affects:** The site supports a huge population of deer which summer along the Scott River and feed in the fields. Deer protection was not planed nor put in the budget. Previous sites where deer populations were heavy did not affect the growth and health of the cuttings. This was not the case here. The deer literally attacked the cuttings in this location and nipped off every leaf and bud as it emerged. Our hind sight feels they enjoyed the cuttings for two reasons: 1.) Unlike the area were we concluded browse would not hurt vigorous cuttings, there are very few riparian species in this reach. We feel the deer focused on the willow at this site because they added a welcome variety. 2.) We have since noticed that the deer prefer to browse on riparian species when they are stressed. Due to the dry 1999 summer, high weed competition and a deep water table level, we feel the cutting were stressed already. The dry spring exacerbated the situation because more deer focused on the riparian areas.

**Post Planting Evaluation:** We did not achieve the success we have been used to using this planting style. We should have budgeted for browse protection. We feel the difficulty of the site combined with the excessive browsing caused a significant percentage of fatality. After the second season, the survival rate was 42% and only 10% of the surviving trees had grown beyond the browse level.

**Site 2:**

**Location:** Main stem of the Scott River one mile below Confluence of Moffet Creek. Both sides of the river were planted along this site. The active channel is excessively wide below the confluence of Moffet Creek. The channel moves dramatically throughout this reach due to the excessive bed load. Our goal was to plant behind stabilized areas and in/along suitable areas of overflow channels in an attempt to confine the active channel. Approximately 4.5 acres were planted in this location

### Specific Site Conditions:

**Low Flow Water Table Elevation:** Planting elevation varied throughout this project site. Some trees were planted in selected overflow areas where the average low flow water table depth is estimated at about 4-5 feet. The higher terrace was approximately 8-10 feet to low flow water table elevation. There are cottonwood and willow but many of them are decadent. There appears to be a lack of natural regeneration. In the lower areas, we feel it may be due to the rapid channel fluctuations and bed load movement which prevent establishment.

**Plant Competition:** In the over flow planting locations there is no competition. The poor soil conditions and reflective heat prevent annuals from establishing. Sand Bar willows are present in this area. They spread by runners and develop thick stands in unsuitable areas such as the areas we are trying to establish. The sand bar willows trap fines and build up the soil around them, improving soil conditions. We focused on planting in locations which the sand bar willows stabilized, therefore there was some competition from the sand bar willows.

The higher terrace areas which were planted did have a lot of annual competition. Quack grass was present in most locations as was star thistle and Marlahan mustard.

**Soil Condition:** The higher terraces possessed good soil quality with high water holding capacity. The overflow locations possessed poor soil except where the sand bar willows had trapped fine sediment. We planted in these areas where applicable. Other locations were simply washed bed load material. These soil conditions were poor but, establishment will trap sediment and improve soil conditions. The RCD has had some success in gaining quality establishment on high gravel bars which possess poor soil conditions. Mulching is needed in these areas in order to reduce the radiant heat. The heat generated by the gravel burns the plantings stock and kills the plant. The mulch around the plant absorbs the heat and protects the stock.

**Wildlife Affects:** The deer browse was also severe in some locations on this site. This summer was extremely dry due to lack of spring rains. Therefore, the deer focused on wet riparian areas from May through November. Secondly, the lack of soil moisture caused the trees to stress and not rebound as well from browsing.

**Post Planting Evaluation:** The Success at site #2 was also fairly disappointing as well. There were several reasons for the worst survival rate we have experienced using this planting style. After one season, only 36% of the plantings were alive. The identified reasons for poor success were as follows: Poor planting stock - just under 10% of the stock did not show enough sprouting to prove that any root development occurred. Poor protection - Although the trees were mulched with bark, the bark material was too small. Bark was removed by wind, and areas irrigated by sprinklers (from an alfalfa field). This allowed the stocks to be burned by reflective heat. Proof this occurred is shown by dark "burn" marks at the base of the cuttings. Browsing - the stress of a poor year for establishing riparian trees (lack of spring rains) caused the cutting to be weak. The

constant browsing exhausted the plant and prevented it from resprouting. Once again, the RCD should have budgeted for browse protection. The lack of precipitation focused an extremely large amount of deer into the riparian areas. The RCD has experienced several riparian failures within this reach of the Scott River. We are not sure why riparian establishment is so difficult in this reach. Good stock in excellent planting locations are failing.

### **Site 3:**

Location: Main stem of the Scott River 2 miles below confluence of Shackleford Creek  
The North side of the Scott River was planted to Black Cottonwood, Red Willow, Pacific Willow and Ponderosa Pine. The channel is in good condition and seems to be stable. The riparian area is thin and throughout the project site. The intention of the riparian planting at this site was to increase the width of the riparian area to increase the riparian strength and provide an overstory specie. The planting location is a low terrace area which used to be a pasture.

#### Site Specific Conditions:

Low Flow Water Table Elevation: The estimated water table elevation during the low flow period of the year is about 6-7 feet.

Plant Competition: There is significant plant competition in the project site. Orchard grass, horsetail, and quack grass dominate the area.

Soil Condition: The soil in this planting site is excellent. The soil is dominated by layers of sandy-loam which holds moisture yet is porous enough to allow easy root development. The site is located just above the canyon reach of the Scott River which receives repeated floods.

Wildlife Affects: Deer browsing or beaver damage was not an issue at this site. The trees grew very well throughout the summer. During the early fall when the migrating deer herds moved from the Marble mountains to the valley floor, significant browsing occurred. However, the trees were strong enough to handle the browse. The pine trees also look excellent and appear to be established.

Post Planting Evaluation: Site #3 responded very well to the planting style. Samples of survival rates averaged 84%. The trees experienced several feet of growth and appear to be healthy. We are satisfied with the outcome of this site.

### **Site 4:**

Location: On Moffet Creek At Fort Jones. The RCD planted the West side of Moffet Creek just behind the town of Fort Jones. Just over an acre was planted here along the terrace of Moffet Creek.

Site Specific Conditions:

Low Flow Water Table Elevation: The estimated water table in this reach is estimated to be very deep. The level of a Sump pond located at the North end of the Site showed the water table to be at about 12-14 feet.

Plant Competition: There is some plant competition but it is not significant. Star Thistle and annual grasses were the dominant species.

Soil Condition: The soil varied from excellent to poor. Much of the soil was high quality loam. There was a section which was gravel dominated. The trees in this location are much shorter and the survival rates were lower.

Wildlife Affects: Due to the location (within Fort Jones City Limits) browsing was not an issue.

Post Planting Evaluation: The site performed well. 78% of the cuttings survived through the first season. 18 inches to two feet growth was the average. We were surprised to see the high survival rates and decent growth at this site.

**Site 5:**

Location: On Moffet Creek .5 miles East of West Moffet Creek Rd. Bridge. The South side of the Creek was planted. Approximately .5 acres were planted. The area planted was on the terrace of a stabilized reach of Moffet Creek.

Site Specific Conditions:

Low Flow Water Table Elevation: The elevation of the water table at this site is not known. We expect it to be about 12 feet deep.

Plant Competition: There was basically no plant competition issues at this site.

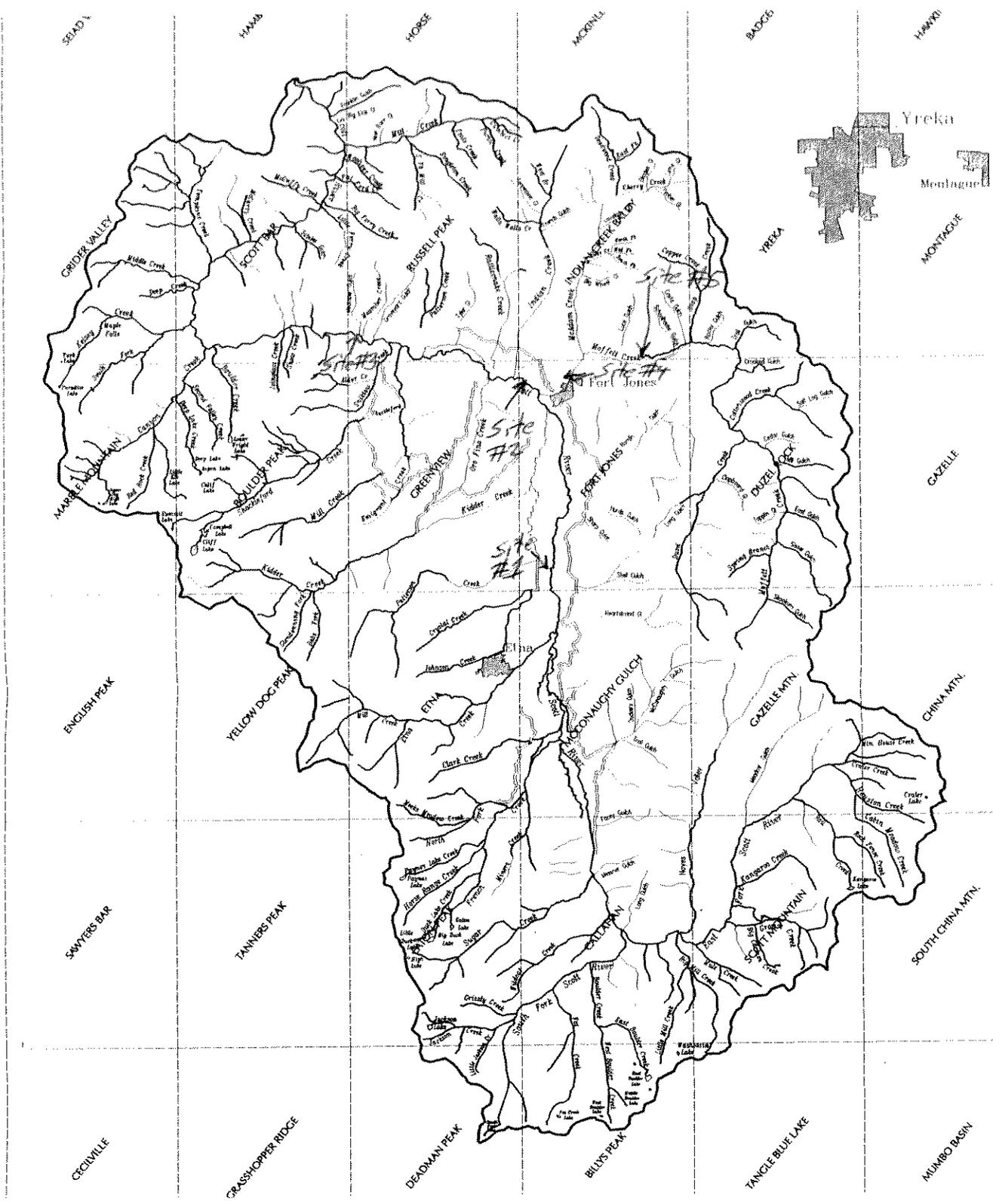
Soil Condition: The soil condition at this site is good. It is composed of clay and small gravel.

Wildlife Affects: The affects of wildlife were minimal. Like site #3, late season browsing occurred but because the browsing was temporary it was not significant.

**Summary:** We are fairly pleased with the over all survival rate but are concerned about specific site (#1 & #2) results. Unfortunately, the Spring and Summer of 1999 was an awful year for riparian establishment. However, the RCD could have improved survival results and plant growth rate if more management and tree protection work were

budgeted. The RCD will now install mulch and provide browse protection on all future projects where browse is probable. We feel the damage due to deer browse was the most significant impact affecting the survival rate.

# SCOTT RIVER HYDROLOGIC SUB-BASIN



Please indicate the location of the proposed project. Identify the project location by placing a colored point on the base map provided. For projects that are linear in nature, please highlight the stream reach of the proposed project.

USFWS Project Number: 97-Partners-02

CDFG Project Number: \_\_\_\_\_

Project Proposer: Siskiyou RFD

Project Title: Landowner Riparian  
Restoration Project

Fiscal Year: 1998

Stream Name: Scott River Watershed

Tributary To: Klamath River

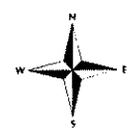
USGS Quad Name (1:24,000): \_\_\_\_\_

Township/Range: \_\_\_\_\_

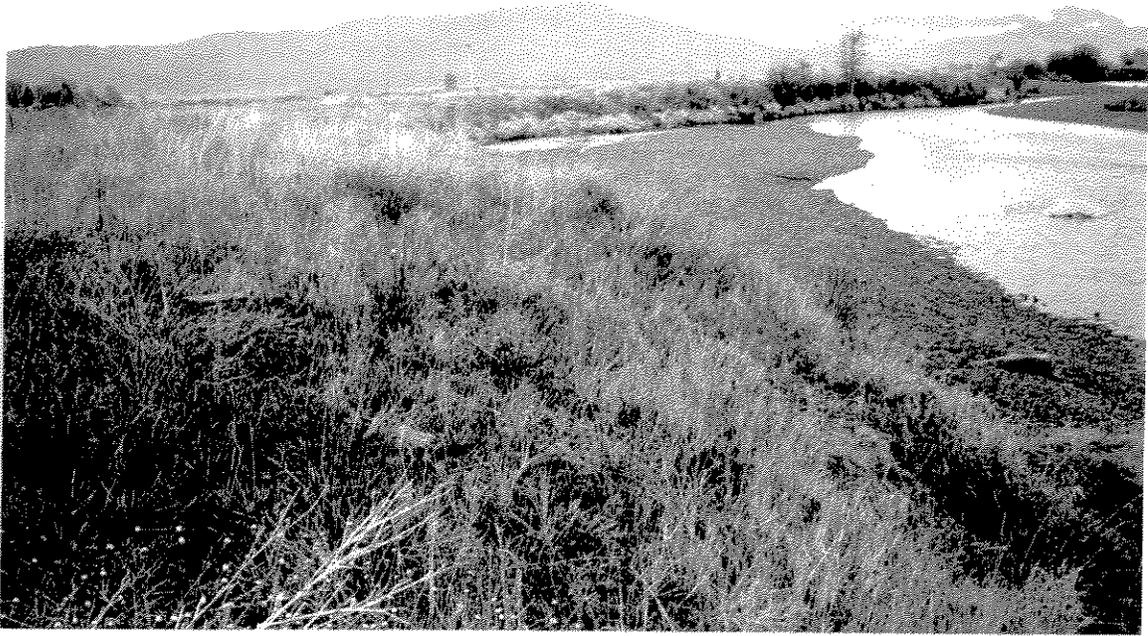
Section Number: \_\_\_\_\_



- Perennial Stream
- Intermittent Stream
- Ditch or Canal
- 1:24,000 USGS Quad



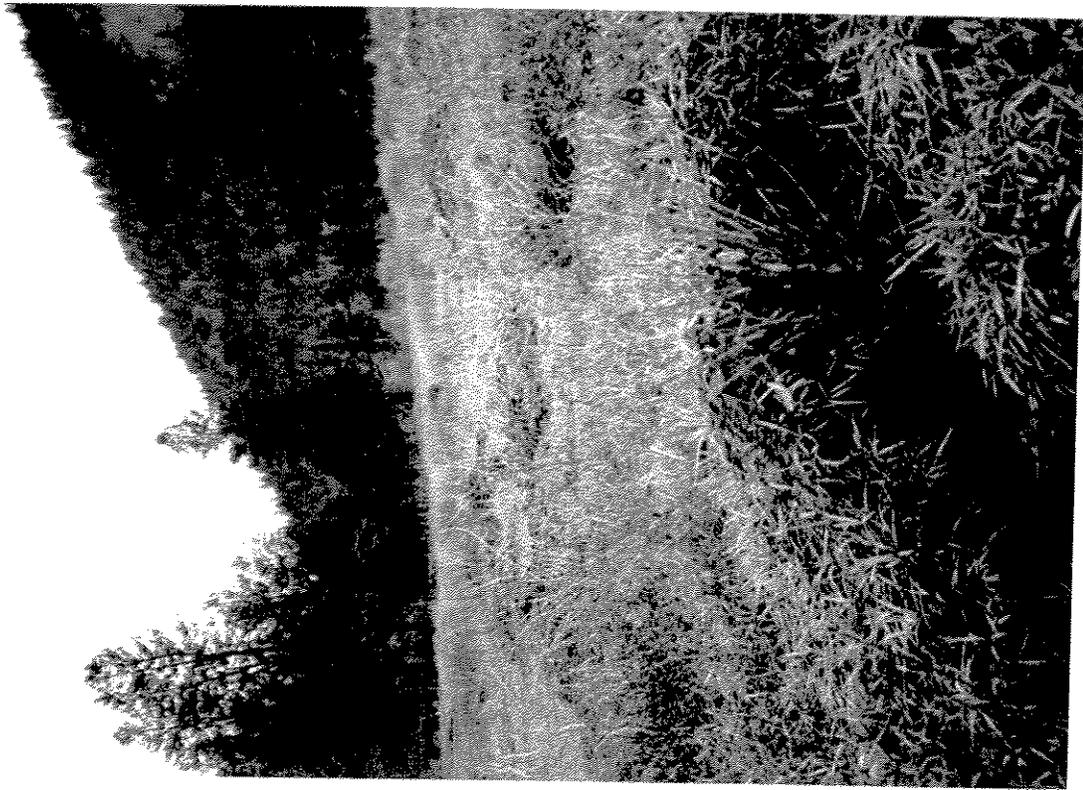




Site #1: Photo of typical surviving trees after two growing seasons. Notice broken tips from browse.



Site #2: Picture taken in the fall of cutting which has been browsed by deer. This is a typical photo of surviving trees at this site.



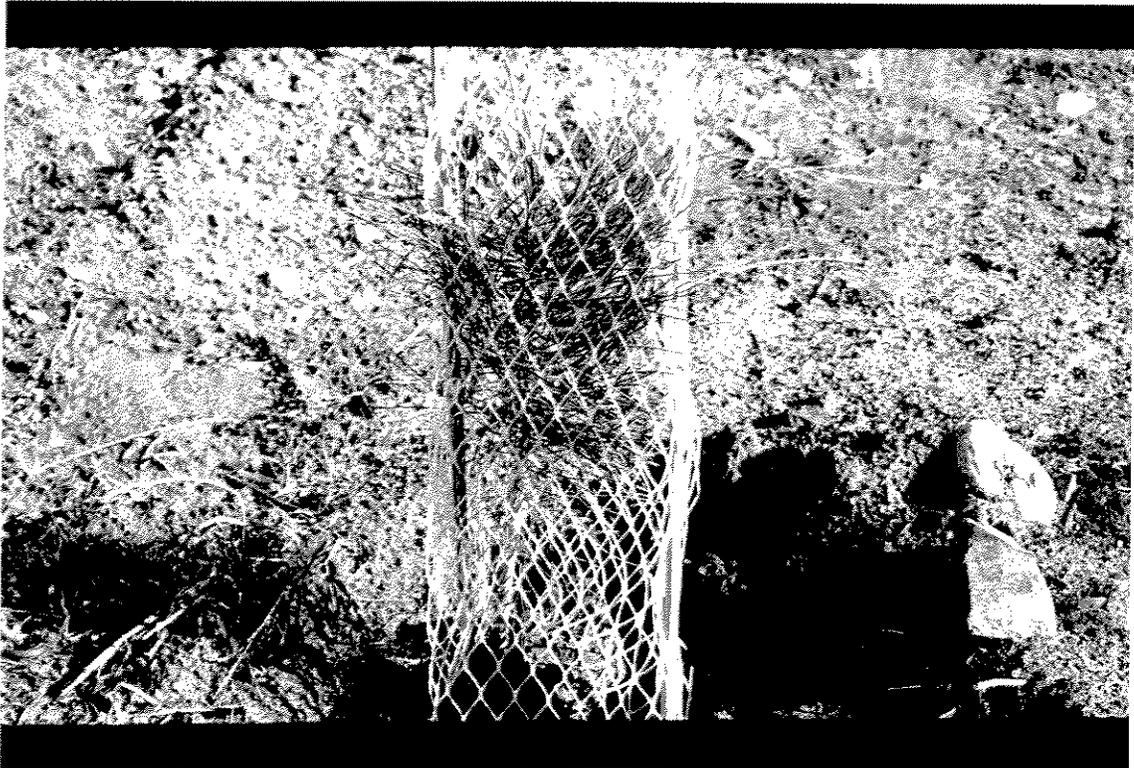
Site #3: Typical tree at site #3 in the fall of 1999. One seasons growth



Site #4: Typical growth at site #4. One season of growth ( fall 1999).



Site # 5: Typical tree at site #5. Photo taken after one season of growth (fall, 1999).



Site #3: Conifer tree which was planted in 1999 as a two year old tree.

FINAL BUDGET  
 LOCALLY BUILT FISH SCREEN  
 PROJECT ID# 97-PARTNERS-02

<b><u>Item:</u></b>	<b><u>Original Budget:</u></b>	<b><u>Final Revised Budget:</u></b>	<b><u>Actual Budget:</u></b>
Salaries	6,163.00	2,514.64	2,514.64
Expendable	5,736.00	9,636.00	9,636.00
Operation & Maintenance	<u>360.00</u>	<u>109.36</u>	<u>109.36</u>
Subtotal	12,259.00	12,259.00	12,259.00
Admin. @ 10%	1,226.00	1,226.00	1,226.00
<b>Total</b>	<b>13,485.00</b>	<b>13,485.00</b>	<b>13,485.00</b>