

SWAMP CREEK HARDWOOD AND WETLAND RESTORATION PROJECT, FY05

BPA Contract #00022522

BPA Project #1992-026-01

Completion Report January 2006

By:

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Abstract

The Swamp Creek Hardwood and Wetland Restoration Project for FY05 included the following: installation or replacement of 10 troughs and 10 springboxes at 11 spring locations in the Joseph Watershed, and protection of the spring sites with 2,265 total ft of fence; protection of 12 chronic sediment sources in Swamp Creek; modification of 41 instream structures to allow for juvenile fish passage and promote recovery of natural hydrologic processes; and annual monitoring. Native hardwood caging, water gap hardening and baseline monitoring were not completed due to lack of time and a law suit that froze all project work being completed under Categorical Exclusions.

Introduction

The upper part of Swamp Creek flows through a broad, flat, alluvial valley. Original channel and valley characteristics were influenced by the presence and activities of beavers. Beaver dams slowed water, raised the water table, and created off channel pools and ponds. With the loss of beavers in the valley and concurrent high flow events, roading, timber harvest and past and current grazing, bank erosion has and continues to occur.

Currently, the channel is slightly incised with bankfull width-to-depth ratios just out of the range expected for the channel type (Lower Grande Ronde BA, 2001). A high sediment load is present within the system. Riparian vegetation is limited to a short distance of the stream channel and is a monoculture of alder, with little presence of other shrub species. The Lower Joseph Creek watershed is rated as Functioning At Risk for stream temperatures in the Lower Grande Ronde Subbasin Multi-species BA (2001).

The overall objective of the project is to improve the physical, chemical, and biological processes within Swamp Creek. The Swamp Creek Hardwood and Wetland Restoration project is a multiple-year, on-going project initiated in 2001 and listed in the Lower Grande Ronde Subbasin Multi-Species Biological Assessment (pp. 195-206) completed by the W-WNF in 2001.

Specific project objectives are:

- Improve streambank stability
- Increase and diversify riparian vegetation
- Improve floodplain functionality and reduce erosion
- Improve habitat for a variety of fish and wildlife species
- Decrease stream temperatures

- Improve fish passage
- Inventory heritage resources
- Raise the water table in the meadow areas of Swamp Creek (long-term goal).

The first five objectives are interrelated and will be accomplished through a combination of riparian pasture fence construction, deciduous planting and caging, seed/cutting collection and propagation, hardening existing water gaps, inventorying existing water sources and subsequent spring developments.

Forty-one instream structures were installed in Swamp Creek in the mid-1980s. They were intended to provide scour holes for fish rearing habitat and increase the amount of large woody debris in the creek system. However, most structures were perpetuating excessive bank scour on the downstream side of the structures and were barriers to juvenile fish passage. The sixth objective has been met in that these structures were reconfigured in 2005, allowing for juvenile fish and aquatic species passage and stream narrowing while increasing fish habitat complexity with the addition of whole trees to Swamp Creek.

The seventh objective, a project-wide inventory of heritage resources, is accomplished in phases as specific components of the project are planned. This will aid in heritage protection and preservation. Raising the water table is a long-term goal that will be realized as the riparian condition improves and the riparian vegetation matures to the point that beaver colonies can return to the meadow systems above Swamp Creek Cow Camp.

Methods and Materials

Methods and materials for each project component are described below (Table 1).

Table 1. Methods and Materials for Swamp Cr. Project, 2005.

Project Component	Materials Description	Accomplished by:
Off-Site Water Development	Shovel, Pulaski, fencing materials, trough, springbox, plastic pipe, pipe fittings, excavator	FS seasonal employees; TEC crew; contractor
Chronic Sediment Source Treatment	Cow panels, fencing materials, chainsaw-run auger.	FS seasonal employees
Instream Structure Modification	Map, GPS, bucket, wire, fence pliers, fence stretcher, thumbed excavator.	Contractor and FS employee
Seed Cutting, Collection, & Propagation	buckets, clippers, seed bags	FS employee
Heritage Inventory	map, GPS, camera	FS employee
Annual Monitoring	Onset temperature sensors, tape measure, GPS, camera, data forms,	FS employee

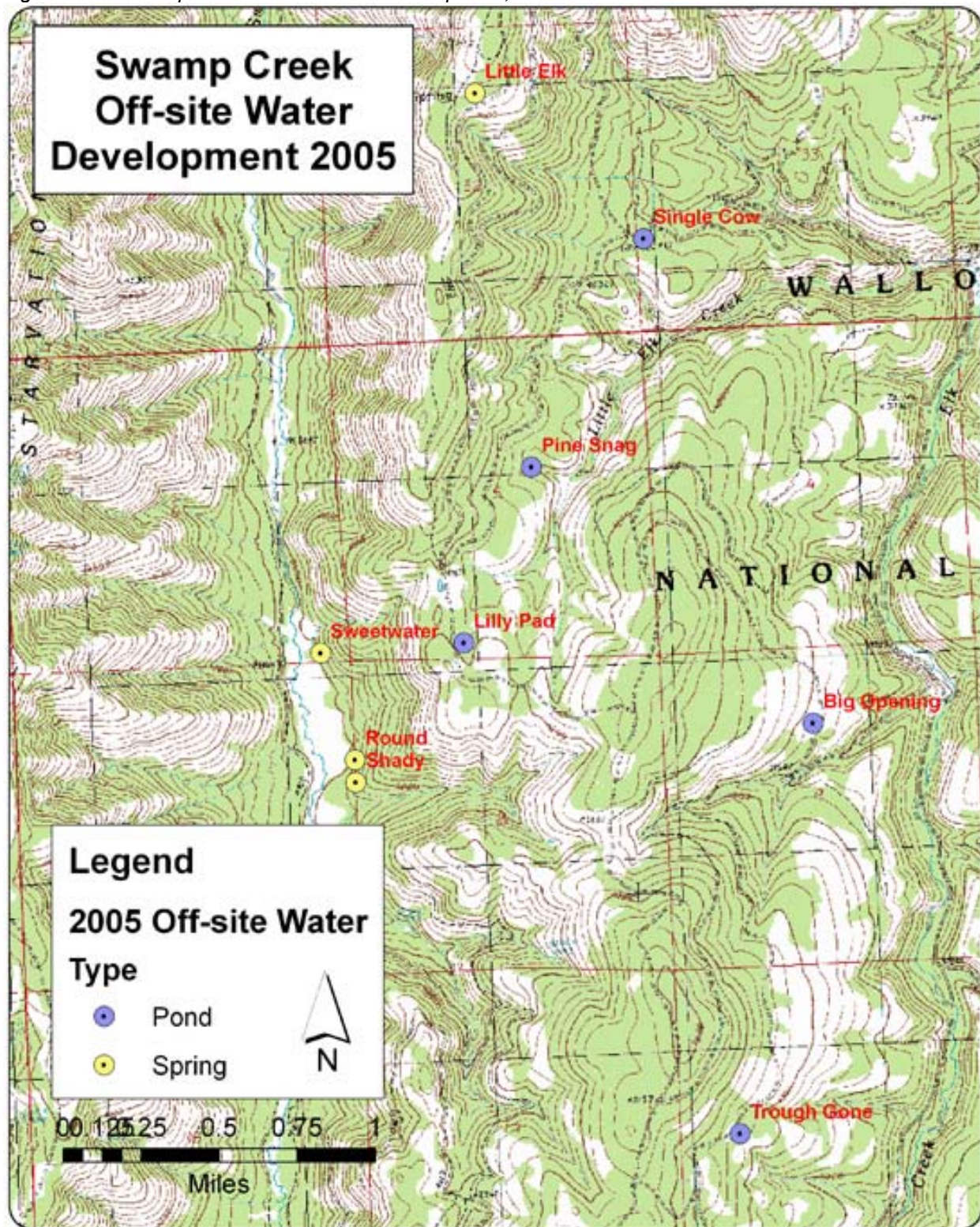
Project Description

A comparison of the 2005 original BPA contract tasks and the final accomplishments are listed below in Table 2 and displayed in Figures 1 and 2.

Table 2. Summary of work performed in Swamp Creek, 2005.

Tasks	Location	Date	Final Accomplishments	Original Contract	Difference
Off-Site Water Development	T02N, R45E, S5, 9, 16 T03N, R45E, S33	06/05 – 10/05	11 troughs 5 ponds	5 troughs 1 pond	+6 troughs +4 ponds
Residual Deciduous Plant Caging			0 plants	50 plants	-50 plants
Chronic Sediment Source Treatment	T02N, R45E, S7, 18, 19, 29, 30	09/05	5 sources	12 sources	- 7 sources (5 of those are water gaps)
Instream Structure Modification	T03N, R45E, S6, 7, 18, 19, 30	07/05 – 08/05	41 structures	41 structures	None
Seed Cutting, Collection & Propagation	Joseph Creek Watershed	9/05	3500 hardwood cuttings; 3.5 gallons hardwood seed	not specified	N/A
Monitoring	T03N, R45E, S30, 19, 18 T02N, R45E, S6,7,18,19	N/A	annual monitoring	annual & baseline monitoring	-baseline monitoring

Figures 1a. Swamp Creek off-site water development, 2005.



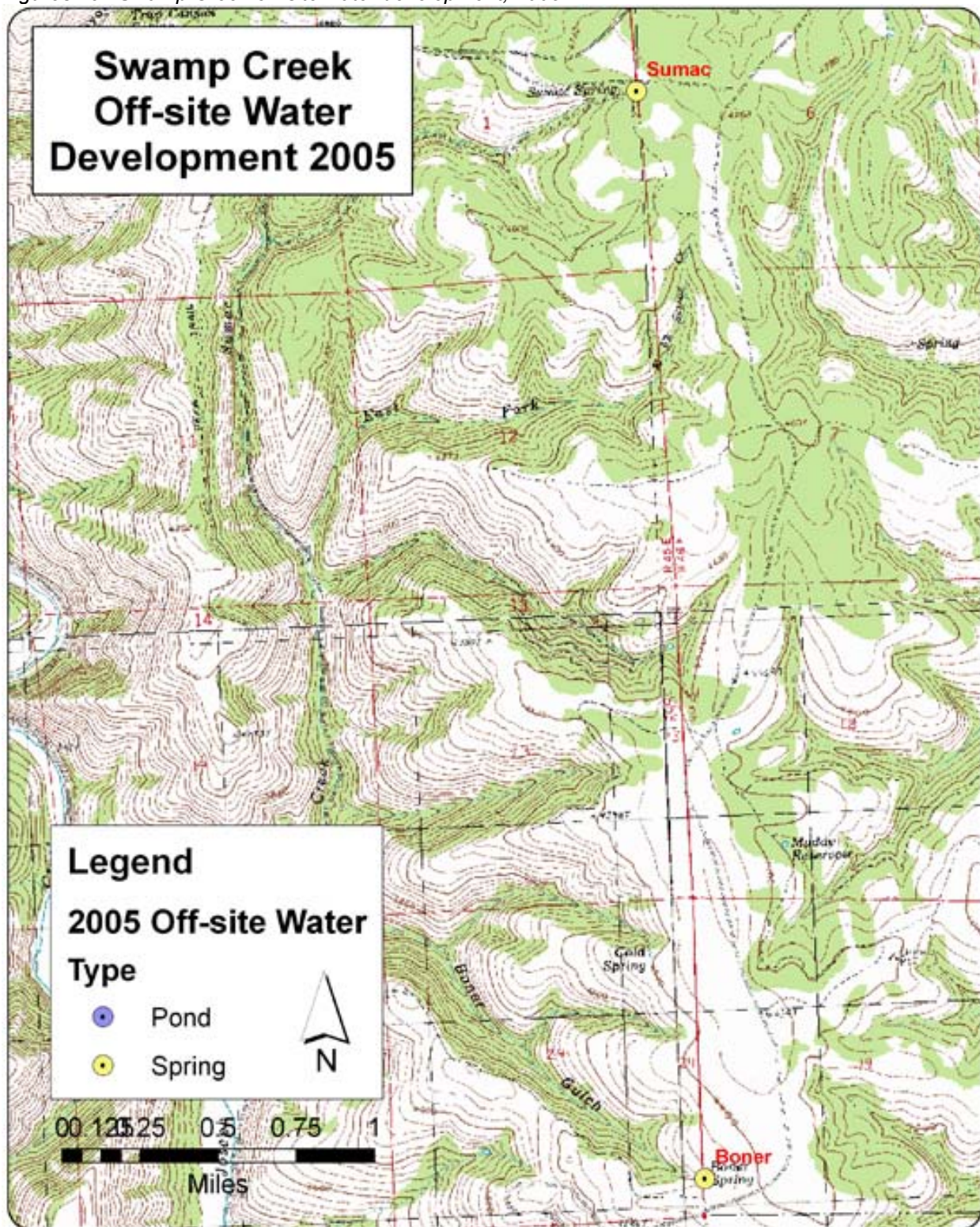
**Swamp Creek
Off-site Water
Development 2005**

Legend
2005 Off-site Water
Type

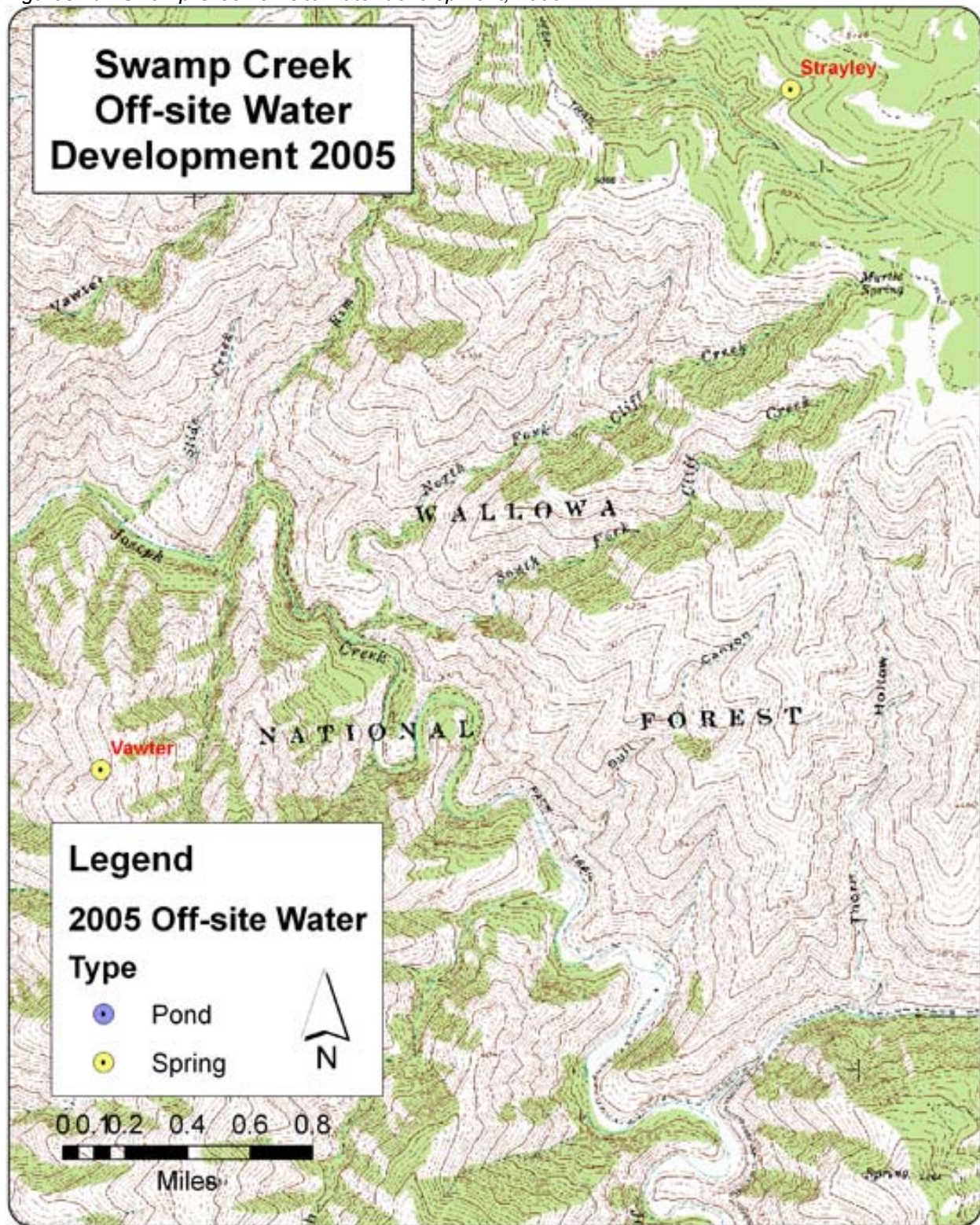
- Pond
- Spring

0.0 0.125 0.25 0.5 0.75 1
Miles

Figures 1c. Swamp Creek off-site water development, 2005.



Figures 1d. Swamp Creek off-site water development, 2005.



Figures 1e. Swamp Creek off-site water development, 2005.

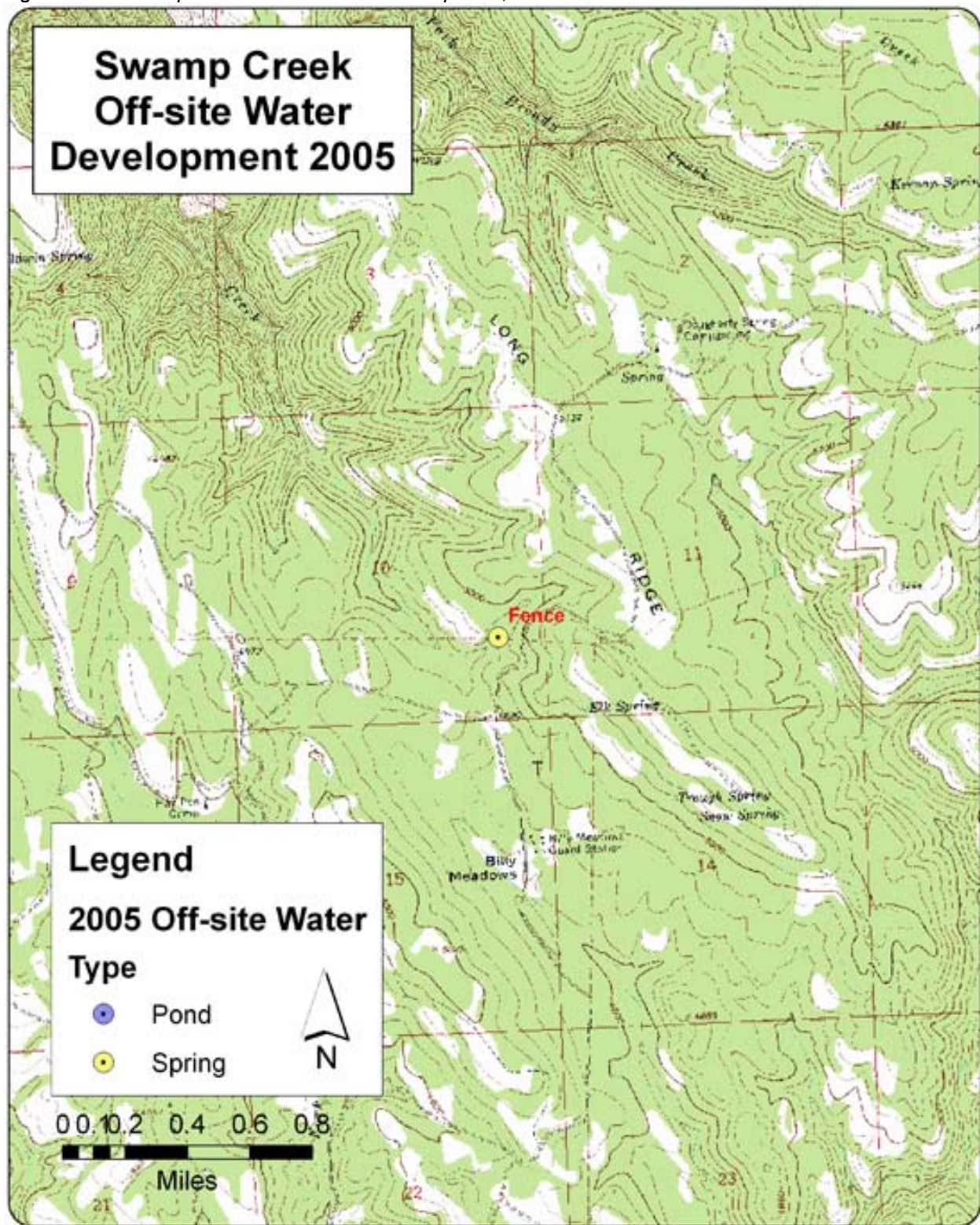


Figure 2. Location of chronic sediment sources treated, 2005.

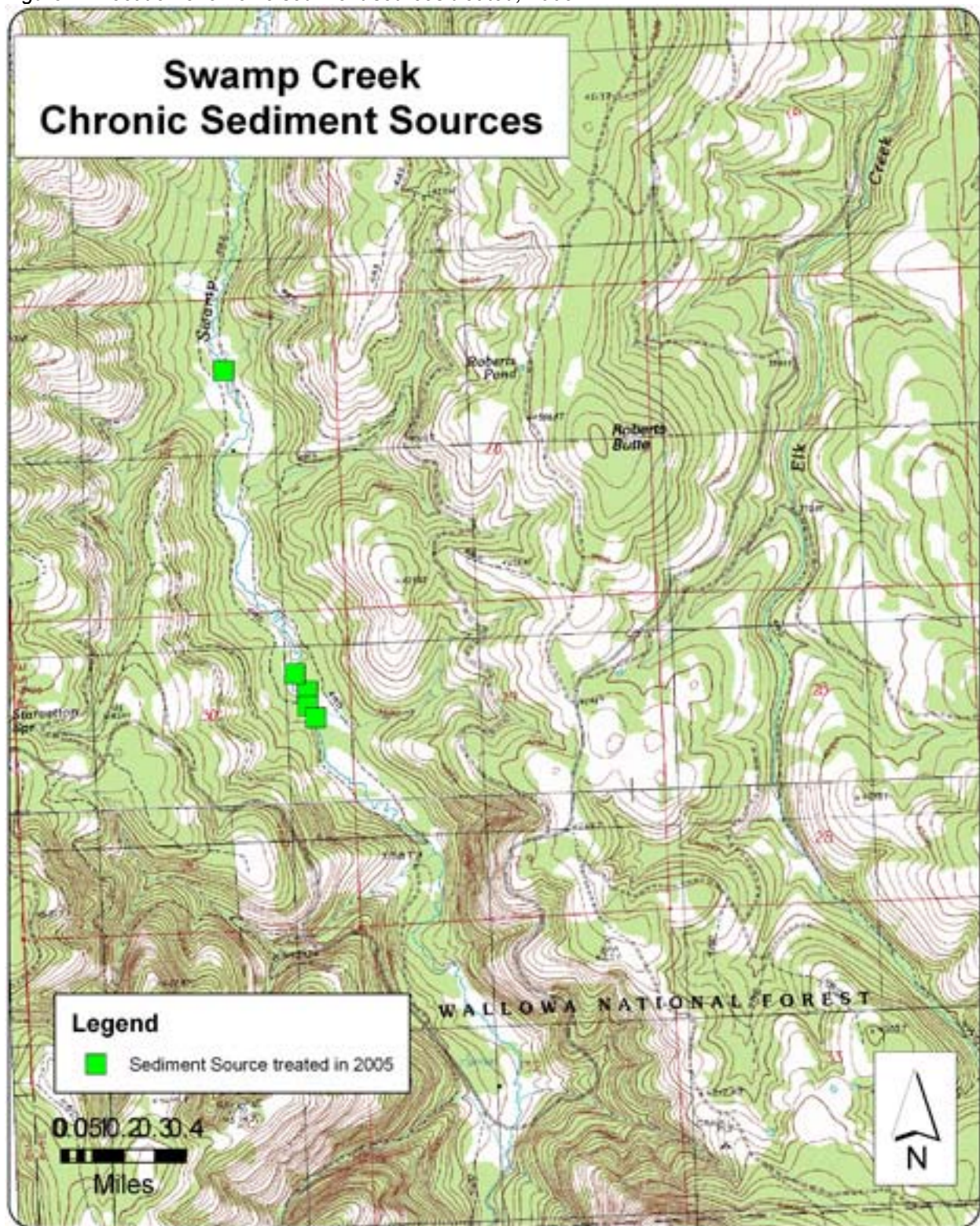
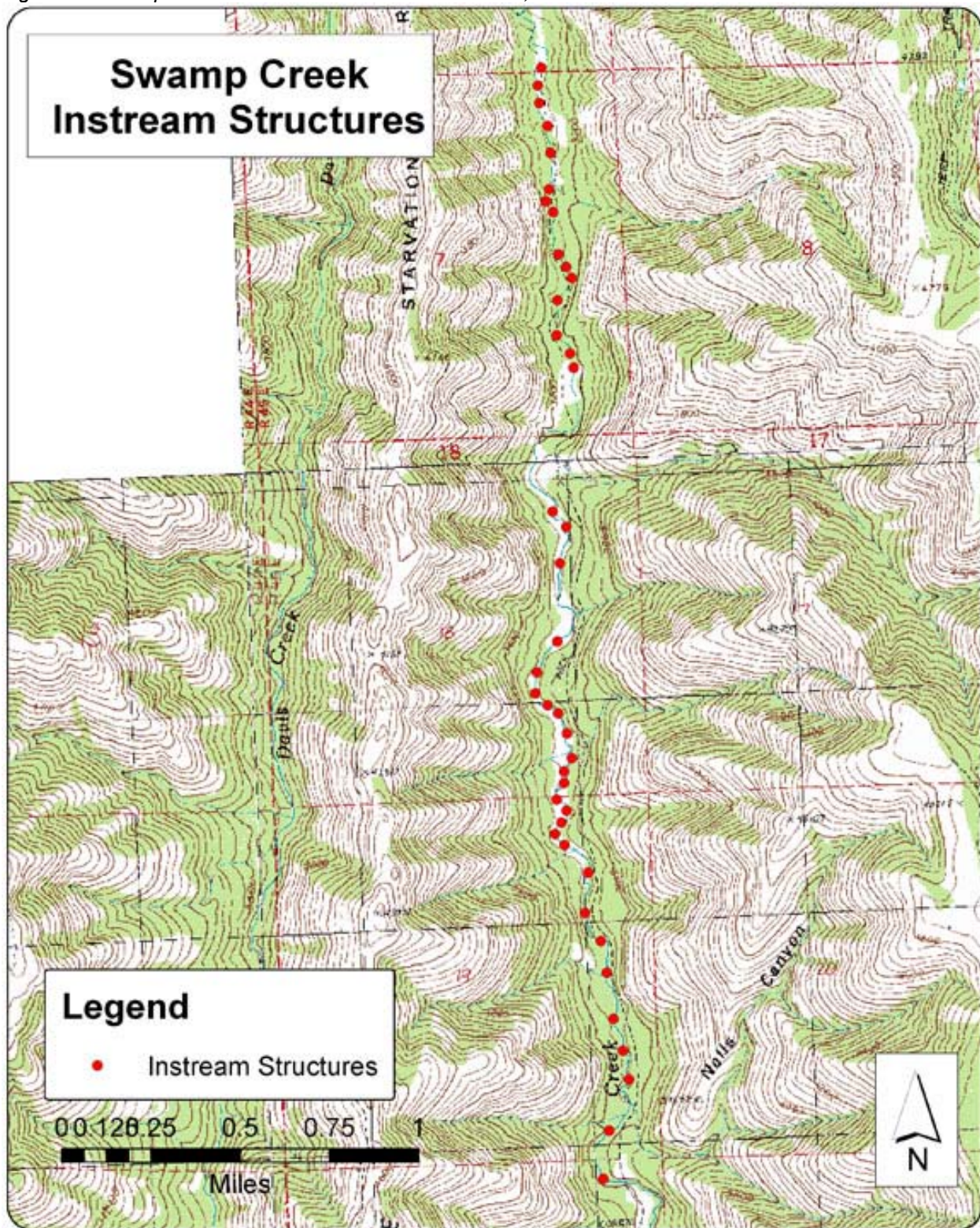


Figure 3. Swamp Creek Instream Structure modification, 2005.



Project Participants

Table 3. Summary of Swamp Creek project participants, responsibilities and fiscal contributions, 2005.

Participant	Responsibilities	Fiscal Contribution
Wallowa Resources	Developed RFPs, contracts with USFS; managed contracts; wrote reports w/ FS	\$21,567
USFS	Assisted in developing RFPs, contracts with WR; installation of off-site water developments; plant cutting and seed collection; chronic sediment source treatment; inspected contract work; development of monitoring plan with GRMW; wrote reports w/ WR	\$29,096
Range Permittees	Grazing monitoring; fence maintenance; assisted in pond selection for cleaning	\$1,400
Bonneville Power Administration	Fiscal contributor	\$23,519
Grande Ronde Model Watershed	Assisted in development of monitoring plan with USFS	

Description of Project Area

This project is located along Swamp Creek from the W-WNF boundary (river mile 17.2) north to Cow Camp (river mile 8.6), T02N and T03N, Range 45E, Lower Joseph Creek watershed, Wallowa County, Oregon. See Figures 1 and 2 in Project Description section above.

Results and Discussion

Off-Site Water Development Five upland pond sites were developed on the west side of Swamp Creek during the summer of 2005. These sites were identified by an on-the-ground upland water inventory completed by Forest Service personnel, using existing maps of developed and undeveloped water, and soliciting permittee knowledge of water sources in 2004. These ponds were selected over developing new spring sites because they are expected to need less maintenance over time and were preferred by the permittees. They are expected to help relieve pressure in the riparian zone, pulling cattle into the uplands and decreasing their impact on the creek. Their names are: Single Cow, Pine Snag, Lilly Pad, Big Opening and Trough Gone.

In addition to the ponds, eleven troughs and eleven springboxes were also installed or replaced at 12 spring locations in the Joseph Watershed by FS personnel assisted by the Training & Employment Consortium (TEC) youth crew. Spring sites were protected with 2,265 total ft of fence. Their names are: Strayley, Sweetwater, Nells, Willow, Little Elk, Fence, Round, Shady, Vawter, Boner and Sumac.

Deciduous Native Hardwood Caging No existing native hardwoods were protected with cow panel cages in 2005.

Chronic Sediment Source Treatment Five chronic sediment source sites along 2 miles of Swamp Creek were protected with cow panel cages by FS employees. The five water gaps did not get hardened due to a timing issue when a law suit late September froze all project work being completed under Categorical Exclusions until November, 2005. The original proposal described proposed work at 12 chronic sediment sources with a separate treatment of 5 water gaps. This was in error, and the water gaps are included as part of the original 12 chronic sediment sources.

Instream Structure Modification Forty-one instream structures were modified along 4 miles of Swamp Creek in July and August, 2005. Four log boles were left in place when they did not promote bank-edge scour downstream, were not a juvenile fish passage barrier, or had shifted or blown out since installation. One bole was removed and reburied in the bank at an upstream angle. Twenty-one boles were removed and placed on the bank angling down into the stream at an upstream or downstream angle. Fifteen boles were removed and reburied in the bank or placed on the bank and had a tree placed on top of them to create a foundation for miniature log jam development.

Every structure modification involved removing the gabion baskets (with the exception of a basket or two that were hard to get and were completely covered with vegetation) and as much geo-textile material and wire mesh that could be recovered. Some geo-textile was left buried in a few banks when the removal of the material was deemed secondary to preserving the integrity of the bank. Much of the wire mesh was rusty and broke apart easily, thus making it difficult to remove. High turbidity at each site during modification prevented visual identification of lost pieces of wire or fabric. Because of this, some geo-textile material and wire mesh pieces were undoubtedly missed at each site and will be left there to decompose or rust naturally.

Monitoring and Education Annual monitoring was completed but the baseline monitoring was not completed due to time and personnel constraints. Other work in this project (e.g. instream structure modification) was prioritized over the baseline monitoring activities.

Summary and Conclusions

Many more water developments were completed this year than expected, thanks to the assistance of the TEC crew for 2 weeks. Eleven troughs were installed, 5 ponds cleaned, approximately ½ mile of fence constructed around spring sites, and one trough repaired for drainage problems. Five chronic sediment sources were treated in Swamp Creek. No water gaps were hardened due to a lawsuit, but they are expected to be hardened in 2006. Annual monitoring of stream temperature, well depths, and repeat photography was conducted, but the baseline monitoring did not get accomplished. Our intent is to complete the baseline monitoring for Swamp Creek by 2007.

All Swamp Creek instream structures were modified as planned, creating unimpeded juvenile fish passage for 4 miles downstream of the Swamp Creek Cow Camp and the ability for the stream to narrow, as well as removing approximately 800 pounds of wire and geotextile material from the creek. Fifteen trees were added to the modified structures increasing fish habitat complexity and creating the foundation for miniature log jam development. We would highly recommend the excavator size used, a Cat 312C, for this type of work. It was small enough to move with minimal ground disturbance and large enough to move boles and trees. The modifications, however, took much more time than anticipated; approximately 450 hours, which included excavator, laborer, 4-wheeler and dump truck hours, but not mobilization or demobilization of equipment. This was due to the remote location of the site, difficulty accessing the stream (lack of a road near the stream), difficulty refueling the excavator, and difficulty removing all the trash (geotextile material, wire mesh and gabion baskets), which added many travel hours onto the project and severely increased the cost of the project.

Summary of Expenditures

Table 4. Summary of expenditures for Swamp Creek Project, 2005.

Item	BPA	USFS	Wallowa Resources ¹	Permittees	Total
Off-Site Water Development (5 ponds @ \$360 ea; 11 troughs w/ 2,265 ft of protection fence @ \$1,660 ea)	\$9,409	\$10,307	\$350		\$20,066
Chronic Sediment Source Treatment and Hardening of existing water gaps (5 sources @ \$200 ea)	\$1,000				\$1,000
Instream Structure Modification (41 log weirs @ \$624 ea)	\$8,200		\$17,389		\$25,589
Permittee Contribution				\$1,400	\$1,400
WR Project Manager	\$2,372		\$3,828		\$6,200
WR Indirect Expenses	\$2,538				\$2,538
USFS Personnel		\$15,950			\$15,950
USFS Indirect Expenses		\$2,839			\$2,839
Total	\$23,519	\$29,096	\$21,567	\$1,400	\$75,582
Original Contract	\$33,994	\$18,400	\$26,394	\$1,400	\$80,188
Percent of Expenditure	31%	38%	29%	2%	100%

¹ Funding source: The Nature Conservancy

Photo Monitoring – Swamp Restoration 2005



PP#1: Willow spring with TEC crew; 2005



PP#2: Swamp Cr chronic sediment source #4



PP3: Trough Gone Pond, pre-work; 2005



PP#3: Trough Gone Pond, post-work; 2005

Photo Monitoring – Swamp Restoration 2005



PP#4: Swamp structure #1 pre-work, 2005.



PP#4: Swamp structure #1 post-work, 2005.



PP#5: Swamp structure #35 pre-work, 2005.



PP#5: Swamp structure #35 post-work, 2005.