BONNEVILLE POWER ADMINISTRATION

Restoring Anadromous Fish Habitat in Big Canyon Creek Watershed

Annual Report 2004 - 2005 July 2006 DOE/BP-00005268-6

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Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

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Restoring Anadromous Fish Habitat in Big Canyon Creek Watershed

Annual Report

September 1, 2004 – October 31, 2005

Project No. 1999-015-00
Contract No. 5268

December 2005

Restoring Anadromous Fish Habitat in Big Canyon Creek Watershed

Annual Report

September 2004 – October 2005

PREPARED BY:

Lynn Rasmussen
Nez Perce Soil and Water Conservation District
P.O. Box 131
Culdesac, ID 83524
(208) 843-2931
Fax: (208) 843-2931
honora@turbonet.com

Miranda Main
Nez Perce Soil and Water Conservation District
P.O. Box 131
Culdesac, Idaho 83524
(208) 843-2931

Prepared For:
David Kaplowe, COTR
United States Department of Energy
Bonneville Power Administration
Division of Fish and Wildlife
P.O. Box 3621
Portland, Oregon 97208

Project Number: 1999-015-00
Contract Number: 5268

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Abstract

The *Restoring Anadromous Fish Habitat in the Big Canyon Creek Watershed* is a multi-phase project to enhance steelhead trout in the Big Canyon Creek watershed by improving salmonid spawning and rearing habitat. Habitat is limited by extreme high runoff events, low summer flows, high water temperatures, poor instream cover, spawning gravel siltation, and sediment, nutrient and bacteria loading.

Funded by the Bonneville Power Administration (BPA) as part of the Northwest Power Planning Council's Fish and Wildlife Program, the project assists in mitigating damage to steelhead runs caused by the Columbia River hydroelectric dams. The project is sponsored by the Nez Perce Soil and Water Conservation District. Target fish species include steelhead trout (*Oncorhynchus mykiss*). Steelhead trout within the Snake River Basin were listed in 1997 as threatened under the Endangered Species Act.

Accomplishments for the contract period September 1, 2004 through October 31, 2005 include; 2.7 riparian miles treated, 3.0 wetland acres treated, 5,263.3 upland acres treated, 106.5 riparian acres treated, 76,285 general public reached, 3,000 students reached, 40 teachers reached, 18 maintenance plans completed, temperature data collected at 6 sites, 8 landowner applications received and processed, 14 land inventories completed, 58 habitat improvement project designs completed, 5 newsletters published, 6 habitat plans completed, 34 projects installed, 2 educational workshops, 6 displays, 1 television segment, 2 public service announcements, a noxious weed GIS coverage, and completion of NEPA, ESA, and cultural resources requirements.

Acknowledgements

The Bonneville Power Administration (BPA) funded this project. The District thanks David Kaplowe, Sabrina Keene and Kimberly St.Hilaire from BPA for their assistance. In addition, the District thanks cooperating landowners, who assisted in project implementation on their properties during this time period; Tom Mosman, Brian Garner, Coon Ranch, and Dale Lunders.

The Nez Perce Tribe staff was integral in installing and implementing this project. The District acknowledges Emmit Taylor, Clint Chandler and Kent Werlin.

NRCS staff members who provided design assistance during this time frame include Mike Durham and Ben Letourneau.

Introduction

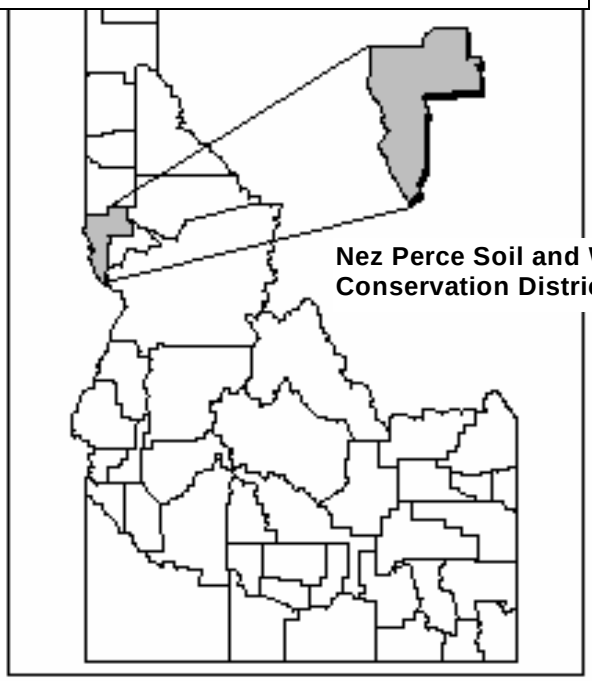
The *Restoring Anadromous Fish Habitat in the Big Canyon Creek Watershed* is a multi-phase project to enhance steelhead trout in the Big Canyon Creek watershed by improving salmonid spawning and rearing habitat. Habitat is limited by extreme high runoff events, low summer flows, high water temperatures, poor instream cover, spawning gravel siltation, and sediment, nutrient and bacteria loading.

Funded by BPA as part of the Northwest Power Planning Council's Fish and Wildlife Program, the project assists in mitigating damage to steelhead runs caused by the Columbia River hydroelectric dams. The project is sponsored by the Nez Perce Soil and Water Conservation District. Target fish

species include steelhead trout (*Oncorhynchus mykiss*). Steelhead trout within the Snake River Basin were listed in 1997 as threatened under the Endangered Species Act.

The Big Canyon Creek watershed (figure 2) is located in northern Idaho within the Nez Perce Soil and Water Conservation District (District boundary) (figure 1) and Lewis Soil Conservation District. Big Canyon Creek is a tributary to the Clearwater River near Orofino, Idaho.

Figure 1. Nez Perce Soil and Water Conservation District location map.



PROJECT OVERVIEW

Big Canyon Creek historically provided spawning and rearing habitat for A-run wild summer steelhead in the Clearwater River drainage. However, extreme high runoff events, low summer flows, high summer water temperatures, poor instream and riparian cover, and siltation of spawning gravel reduced the suitability of Big Canyon Creek and its tributaries as quality spawning and rearing habitat for anadromous and resident cold water fish. Additionally, sediment, nutrients, and bacteria from existing land-use practices adversely impact water quality. Primary habitat degradations and pollutant sources are due to agricultural, livestock, forestry and road practices.

The Restoring Anadromous Fish Habitat in Big Canyon Creek Watershed is a multi-year watershed/stream restoration project that was initiated in 1999. This status report encompasses the time period September 1, 2004 through October 31, 2005.

WATERSHED DESCRIPTION

The Big Canyon Creek watershed ranges in elevation from 950 to 4,639 feet near Mason Butte. The stream flows for 31 miles through the Camas Prairie near the community of Craigmont to the community of Peck (figure 2). Average annual precipitation generally ranges with the elevation and varies from 20 to 28 inches per year.

The majority of the land (85%) within the watershed is privately owned. The Nez Perce Tribe (NPT) owns almost 8,000 acres (9%), with most of those acres leased to non-tribal members. The remaining lands are under control of the Bureau of Land Management (BLA) (5%) and State of Idaho (1%).

FISH[1]

The Big Canyon Creek watershed provides habitat for anadromous as well as resident fish. Anadromous species include the Snake River Basin steelhead (*Oncorhychus mykiss*) and Snake River fall Chinook salmon (*O. tshawytscha*), both of which are listed as “threatened” under the Endangered Species Act. Like many anadromous streams in the Columbia River Basin, salmon and steelhead populations have declined significantly from historic levels due to various

[1] From the BPA project 1999-016-00 Protecting and Restoring the Big Canyon Creek Watershed sponsored by the Nez Perce Tribe. Emmit Taylor contact person.

anthropogenic impacts. It is believed that degraded stream habitat is responsible for reduced survival rates of Chinook salmon and steelhead eggs, fry, and parr in addition to lowered production and carrying capacity of resident *O. mykiss*. In the early 1980s, Nez Perce biologists surveyed lower Big Canyon Creek and two of its major tributaries and found a total of 8 fish species. The anadromous stocks present in the1980s included with A-run steelhead and Chinook salmon.

Snake River Basin Steelhead (*Oncorhychus mykiss*) – Big Canyon Creek and its major tributaries were important historically as reproductive habitat for Snake River Basin steelhead, which the National Marine Fisheries Service (NMFS) listed as "threatened" under the ESA. Critical habitat for "threatened" steelhead also includes the Clearwater River. Big Canyon Creek has one of the top-producing wild A-run steelhead populations in the Nez Perce Reservation and is important for genetic and biological diversity.

Snake River Fall Chinook (*Oncorhychus tshawytscha*) – Distribution of Snake River fall Chinook salmon is found in the Clearwater River from its confluence with the Snake River upstream to its confluence with Lolo Creek. Fall Chinook salmon is also listed as "threatened".

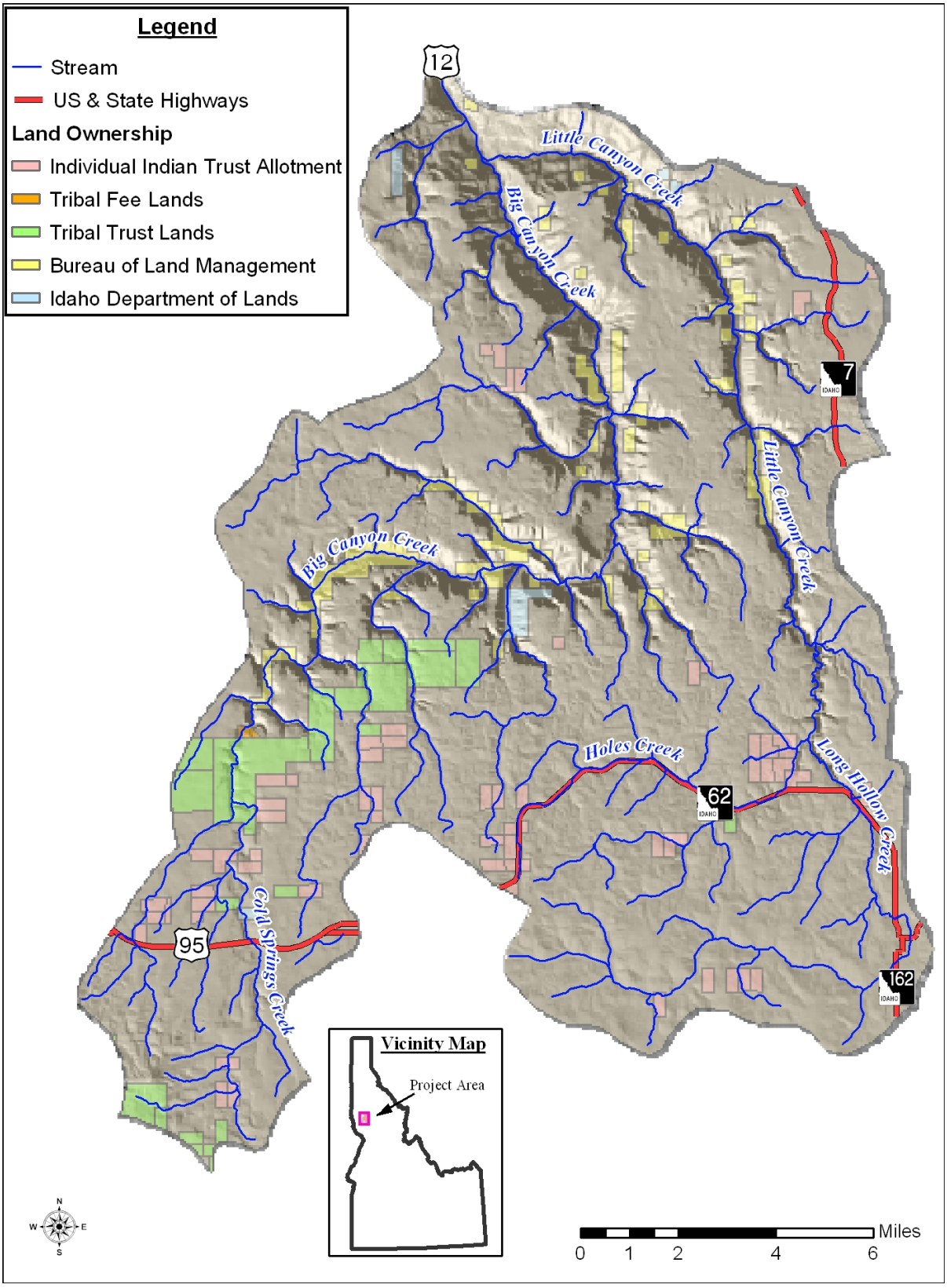
Resident fish – Additional resident fish species include speckled dace (*Rhinichtys osculus*), northern pikeminnow (*Ptychocheilus oregonensis*), Piute sculpin (*Cottus beldingi*), bridgelip sucker (*Catostomus columbianus*), redside shiner (*Richardsonius balteatus*), brook trout (*Salvelinus fontinalis*), and chiselmouth chub (*Acrocheilus alutaceus*).

PROBLEM SUMMARY

A primary limiting factor for resident salmonid populations is the impact of land management activities and development on hydrology, sedimentation, habitat distribution and complexity, and water quality. Agriculture, logging, road construction, grazing, irrigation diversions, and floodplain development have modified the Big Canyon Creek watershed. General ecological problems and limiting factors impacting Big Canyon Creek include:

- Low summer flows
- Wide fluctuations in annual stream flows
- High summer water temperatures
- Increased flooding
- Lack of instream cover for fish and other aquatic species
- Sedimentation
- Fish migration barriers
- Impacted salmon/steelhead rearing and spawning habitat
- Riparian degradation
- Channel/bank instability
- Introduction of exotic organisms

Figure 2. Big Canyon Creek Watershed map.



Coordination

This project complements existing restoration efforts in the Big Canyon Creek watershed including: Nez Perce Tribe's *Protecting and Restoring the Big Canyon Creek Watershed* (BPA project number 1999-016-00), the Nez Perce Soil and Water Conservation District's *Big Canyon Creek Water Quality Program for Agriculture project*, the Idaho Soil Conservation Commission's *Clearwater Focus Watershed* (BPA project 199608600) and the Nez Perce Tribe's *Clearwater Focus Watershed* (BPA project number 199706000). In addition, the District encourages the use of Farm Service Agency (FSA) and Natural Resources Conservation Service (NRCS) programs such as the Conservation Reserve Program (CRP) and the Environmental Quality Incentive Program (EQIP) to further implement fish habitat restoration within the watershed. Table 1 lists the non-BPA funded contributions to the project.

This project shares personnel, vehicles and field equipment with the BPA funded *Restoring Anadromous Fish Habitat in the Lapwai Creek Watershed* project (2002-070-00).

Table 1. Non-BPA Contributions to the Project

Source	Service Provided	Type	Value for the contract period[2]
Farm Service Agency	Grass seeding payments - CRP	Cash	34,152[3]
Idaho Association of Soil Conservation Districts	Technical assistance for engineering designs, construction inspections, subcontract maintenance.	In-kind	4,000
Natural Resources Conservation Service	Engineering design assistance	In-kind	2,000
Americorps	Labor	In-kind	6,800[4]
Nez Perce Tribe	Design assistance, development of fish publication	In-kind	2,880
Idaho Soil Conservation Commission	Cost-share payments for direct seeding systems, pond, grass seeding	Cash	15,420[5]
Landowners	Equipment for planting, layout assistance, materials	Cash and in-kind	27,923[6]
TOTAL			$93,175

Accomplishments

The project period was from September 1, 2004 through October 31, 2005. The original contract length was 9/1/04 to 8/30/05. The project received a no-cost time extension through 10/31/05 to allow for the installation of erosion control structures. The extension was needed due to dry soil conditions in August 2005. The dry soil conditions would have increased installation costs by an estimated 20%.

[2] Values estimated, unless otherwise indicated.
[3] From CRP contracts.
[4] Value from Americorps and District records.
[5] Figures obtained from WQPA program manager
[6] Figures obtained from WQPA program manager, landowners, and District records.

The project period statement of work (SOW) contained 33 tasks. All tasks were completed. Parts of the SOW were entered into PISCES in July 2005. However, the SOW was created prior to PISCES so, the tasks and accomplishments do not follow the PISCES format. Table 2 converts the accomplishments into PISCES metrics. Table 3 summarized the habitat improvement practices which were installed during the contract period. Accomplishments are reported by task listed in the SOW.

Table 2. Metrics Summary from September 1, 2004 through October 31, 2005.

Metric	Units Completed
Wetland Acres Treated	3.0
Riparian Miles Treated	2.7
Upland Acres Treated	5,263.3
Riparian Acres Treated	106.5
Number of General Public Reached	76,285
Number of Students Reached	3,000
Number of Teachers Reached	40

Table 3. Conservation treatment summary by practice type.

Metric	Units	Units Completed
Livestock water systems	Each	4
Upland Grass Seeding	Acres	9
Upland Grass Cover	Acres	529.9
Fence	Linear Feet	1,050
Weed Control	Acres	62
Gully Erosion Control Structures	Each	18
Conservation Tillage	Acres	4,951.6
Grassed Waterways	Linear Feet	1,836
Grazing Management	Acres	114

Objective 1: Continue landowner participation.

Task 1.1. Accept applications for project participation.
Task completed: YES
Work performed: Eight project applications were received from private landowners. The goal was six applications received.

Task 1.2. Prioritize project applications for site evaluations and plan development.
Task completed: YES
Work performed: The applications were prioritized based on those projects that have the highest potential to improve fish habitat.

Task 1.3. Complete initial site reviews and collect resource data.
Task completed: YES
Work performed: Site inventories were completed at 14 sites. These inventories include an on-site visit to collect habitat information and identify habitat related conservation needs. Included in the inventory are site maps, soils information, channel morphology, and vegetation analysis.

Task 1.4. Develop site specific conservation plans and contracts for agriculture and riparian structural and management practices.
Task completed: YES

Work performed: Completed a total of six plans during contract period. Habitat restoration plans include the information collected in the site review, analysis of data collected, selection of treatment alternatives, treatment designs, cost estimates, and landowner concurrence for treatment.

Objective 2: Ensure regulatory compliance.

Task 2.1. Ensure cultural resource compliance.
Task completed: YES
Work performed: Completed SHPO clearance for 20 projects.

Task 2.2. Ensure compliance with Threatened and Endangered Species Act.
Task completed: YES
Work performed: Inventoried 21 sites for T&E species. No T&E species were found at any of the sites.

Task 2.3. Ensure wetland compliances.
Task completed: YES
Work performed: Evaluated 21 sites for wetlands. No wetlands were located.

Task 2.4. Develop protection, avoidance, or abatement plans for cultural resources, threatened and endangered species, and wetland resources, when needed.
Task completed: YES
Work performed: No plans needed.

Task 2.5. Ensure compliance with NEPA and local, state, and federal regulations.
Task completed: YES
Work performed: No additional permits needed.

Objective 3: Implement agricultural, livestock, and riparian structural and management practices to protect and/or restore fish and wildlife habitat, streambank stability, watershed hydrology, water quality, and floodplain function.

Task 3.1. Encourage landowners to adopt improved land management practices.
Task completed: YES
Work performed:

- Completed 2,951.6 acres of conservation tillage on newly planned acres
- Continued implementing habitat improvement management practices on 2,000 acres of cropland.

Figure 3. Direct Seeding (clean runoff water).

Figure 4. Conventional Tillage (sediment laden runoff water).

Sheet/rill erosion reductions range from 3 to 8 tons per acre. Using an average of 5 tons per acre and a 70% delivery rate, over 17,300 tons of sediment was prevented from entering Big Canyon Creek as a result of this effort.

Task 3.2. Design improvement structures and projects to reduce environmental impacts from cropland and livestock production.

Task completed: YES

Work performed: 58 designs completed.

- Two waterways designed
- Three grass seeding designs
- Thirteen erosion control designs
- One fence design
- Thirty-six water and sediment control structures designed
- Three pond designs completed

Task 3.3. Install and inspect structural practices.

Task completed: YES

Work performed: Thirty-four projects installed.

- Installed two waterways
- Installed four grass seedings
- Six erosion control projects installed
- Eighteen water and sediment control projects installed
- Two water developments installed
- Installed one pond inlet
- Installed one pond for livestock water

Figure 5. Water and sediment control structures installed for gully erosion control.

Task 3.4. Provide landowners with operation and maintenance requirements.
Task completed: YES
Work performed: 18 operation and maintenance plans completed for projects installed in the previous contract year. Landowners utilize plans to maintain the habitat improvements.

Task 3.5. Complete noxious weed control.
Task completed: YES
Work performed:

- Four biological control releases for yellow starthistle impacting 50 acres of rangeland
- Weeds pulled along 0.5 miles of riparian area directly adjacent to Big Canyon Creek

Figure 6. Biological control agent released on yellow starthistle.

Objective 4: Coordinate with interagency and locally led conservation efforts.

Task 4.1. Participate or conduct interagency coordination meetings.
Task completed: YES
Work performed:

- Coordinated with IASCD to install erosion control practices
- Met with ISCC, IASCD to coordinate project accomplishments.
- Two interagency meetings in January
- Coordinated with NRCS on projects
- Toured sites with NRCS
- Coordinated with ISCC on project installations

Objective 5: Provide public education and information and technology transfer to assist with project goals.

Task 5.1. Meet one-on-one with project landowners.
Task completed: Yes
Work performed: Completed a total of 24 landowner meetings.

Task 5.2. Publish six NPSWCD newsletters per year.
Task completed: Partial Completion.
Work performed: Due to change in staff during the third quarter, the scheduled newsletter was not published, resulting in 5 newsletters published instead of six.

- October newsletter distributed to over 700 people
- December and January newsletters distributed to over 700 people
- April newsletter distributed to about 2,000 people
- October newsletter distributed to over 700 people

Task 5.3. Conduct one noxious weed educational workshop for watershed landowners.
Task completed: YES
Work performed:
- Completed in coordination with the NPT Biological Control Center
- Weed identification workshop presented with Dr. Richard Old.

Task 5.4. Develop display for the annual Idaho Association of Conservation Districts Conference.
Task completed: YES
Work performed: Set up a display at the Idaho Association of Soil Conservation Districts conference. Display focused on steelhead habitat needs and alternatives for improving habitat. Estimated 100 general public received the information.

Task 5.5. Develop educational display booth for Nez Perce County Fair.
Task completed: YES
Work performed: Display completed. Display focused on steelhead habitat needs and ways landowners could protect and/or enhance habitat. Estimated 15,000 people attended the fair. Of these 3,000 were students, 40 were teachers, and 11,960 were general public.

Task 5.6. Create and exhibit project events and/or related topics on display boards in the Lewiston, Idaho USDA Service Center office and at other NPSWCD events, as applicable.
Task completed: YES
Work performed:
- Fish life cycle display located at the USDA Service Center September – October
- Soil types display at the USDA Service Center September – December
- Yellow starthistle biological control agent display at USDA Service Center March – May
- Noxious weed identification display located at USDA Service Center June – August

Figure 7. Fish Life Cycle Display.

Task 5.7. Advertise NPSWCD's BPA project and activities on local television station.
Task completed: YES
Work performed: Presented watershed health and stream information on KLEW Morning Show. Estimated 30,000 viewers from the general public.

Task 5.8. Advertise NPSWCD's BPA project and activities on local radio stations.
Task completed: YES
Work performed: Provided steelhead winter activity PSAs to local radios. Estimated 30,000 general public received information.

Task 5.9. Participate in web-based information sharing process for Big Canyon watershed activities.

Task completed: YES

Work performed:

- Website location included on newsletter and fair display
- Updated website with project application data
- Updated watershed information

Objective 6: Monitor and evaluate project/practice effectiveness.

Task 6.1. Collect stream temperature data.

Task completed: YES

Work performed:

- Collected data at six sites
- Downloaded data from six sites
- Data recorded

Task 6.2. Complete annual status reviews.

Task completed: YES

Work performed: Completed status review on nine projects

Task 6.3. Created noxious weed GIS coverage.

Task completed: YES

Work performed: GIS coverage of noxious weed species and locations for the project area's Big Canyon watershed. See appendix A for sample weed coverages.

Objective 7: Data management and reporting to BPA

Task 7.1. Complete quarterly reports which 1) summarize data generated by the project, 2) describe work required to collect data, and 3) discuss problems, issues, concerns, and successes.

Task completed: YES

Work performed: Quarterly reports completed by electronic submission to COTR.

Task 7.2. Write and post annual report on BPA website.

Task completed: YES

Work performed: Annual report finished.

Task 7.3. Provide applicable RPA data for the FCRPS Biological Opinion.

Task completed: YES

Work performed: Provided RPA data in January 2005.

Task 7.4. Provide project specific information to BPA on an "as needed" basis for accounting/reporting purposes.

Task completed: YES

Work performed: Provided accrual information in the third quarter.

Task 7.5. Annually supply publicly available databases to StreamNet.

Task completed: YES

Work performed: Data supplied to StreamNet

Task 7.6. Complete monthly fiscal invoice reports.

Task completed: YES

Work performed:

- Completed September, October, and November invoices

- Completed December, January, and February invoices
- Completed March, April, and May invoices
- Completed June, July, and August invoices
- Completed September and October invoices

Budget

There was one budget modification completed during this contract period. The budget summary for this 2004 period is shown below. The 2004 budget spent shows the funds from September 1, 2004 to October 31, 2005.

Table 4. Budget Summary

	CY04 Contracted Budget	CY04 Line trans. #1 4/25/03	Revised Budget Totals	Spent 9/1/04 to 10/31/05	Balance
Salary & Fringe	$74,020.00	($25,328.35)	$48,691.65	$57,440.06	($8,748.41)
Travel	$242.00	($242.00)	0.00	0.00	0.00
Training	0.00	0.00	0.00	0.00	0.00
Rent	$300.00	$933.35	$1,233.35	$1,648.04	($414.69)
Supplies	$5,657.00	$24,637.00	$30,294.00	$28,963.22	$1,330.78
Subtotals	$80,219.00	0.00	$80,219.00	$88,051.32	($7.832.32)
Indirect Costs	8,021	0.00	$8,021.90	$8,805.13	($783.23)
Sub-Contracts	$99,760.00	0.00	$99,760.00	$90,698.18	$9,061.82
Totals	**$188,000.00**	**$ 0.00**	**$188,000.90**	**$187,554.63**	**$446.27**

Note: L.I.T. = Line Item Transfer

Appendix A – Noxious Weed Inventory Report

ROADSIDE WEED INVENTORY SUMMARY REPORT

October 2005

NEZ PERCE SOIL AND WATER CONSERVATION DISTRICT

Big Canyon Creek Watershed Roadside Weed Inventory Report

Prepared by:

Lynn Rasmussen
Justin Peterson

Nez Perce Soil and Water Conservation District
P.O. Box 131• Culdesac, Idaho 83524
Phone 208.843.2931 • Fax 208.843.2931
honora@turbonet.com

Submitted to:

U.S. Department of Energy
Bonneville Power Administration
Division of Fish and Wildlife

Attn: David Kaplowe, COTR
PO Box 3621
Portland OR 97208-3621

Mountain Stake Province
Clearwater River Sub basin
Project No. 1999-015-00
Contract No. 5268

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Introduction

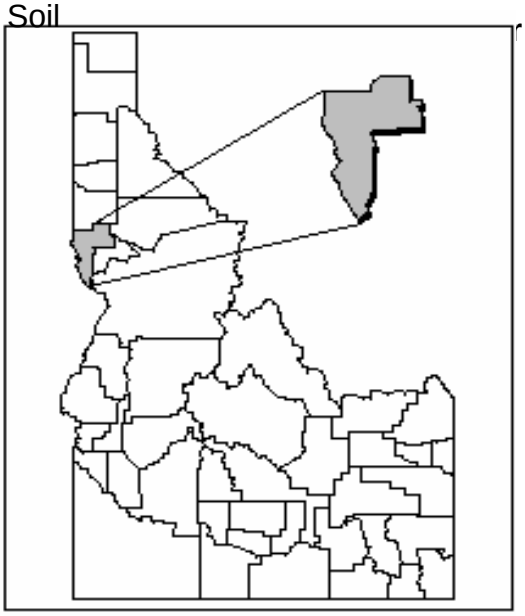
The Big Canyon Creek Roadside Weed Inventory is a component of the *Restoring Anadromous Fish Habitat in the Big Canyon Watershed* project funded by the Bonneville Power Administration (BPA) and the Nez Perce Soil and Water Conservation District (District). The project's goal is to enhance steelhead trout (*Oncorhynchus mykiss*) natural production within the Big Canyon watershed by improving salmonid spawning and rearing habitat.

In order to assess the distribution of noxious weeds in the Big Canyon Creek Watershed, a weed inventory was completed along all federal, state, and county roads in the watershed. The inventory will be useful in identifying new invaders and developing treatment strategies. This coverage is available upon request from the District.

Background

Snake River steelhead were listed as threatened in 1997 under the Endangered Species Act (ESA)(February 5, 1999, 56 FR). In 2000, the Clearwater River was designated critical steelhead habitat (February 16, 2000, 56 FR). Big Canyon Creek was listed as water quality impaired on the State of Idaho's (303)d list (1998) for bacteria, flow, nutrients, sediment, habitat alteration, and temperature.

Figure 1. Location of Nez Perce Soil



The Big Canyon Watershed is located within the District (Figure 1). The Big Canyon watershed encompasses more than 85,000 acres in Nez Perce and Lewis Counties. Elevations range from 950 to 4,600 feet.

Land use in the watershed is dominated by agriculture and grazing (over 60 % of the acreage).

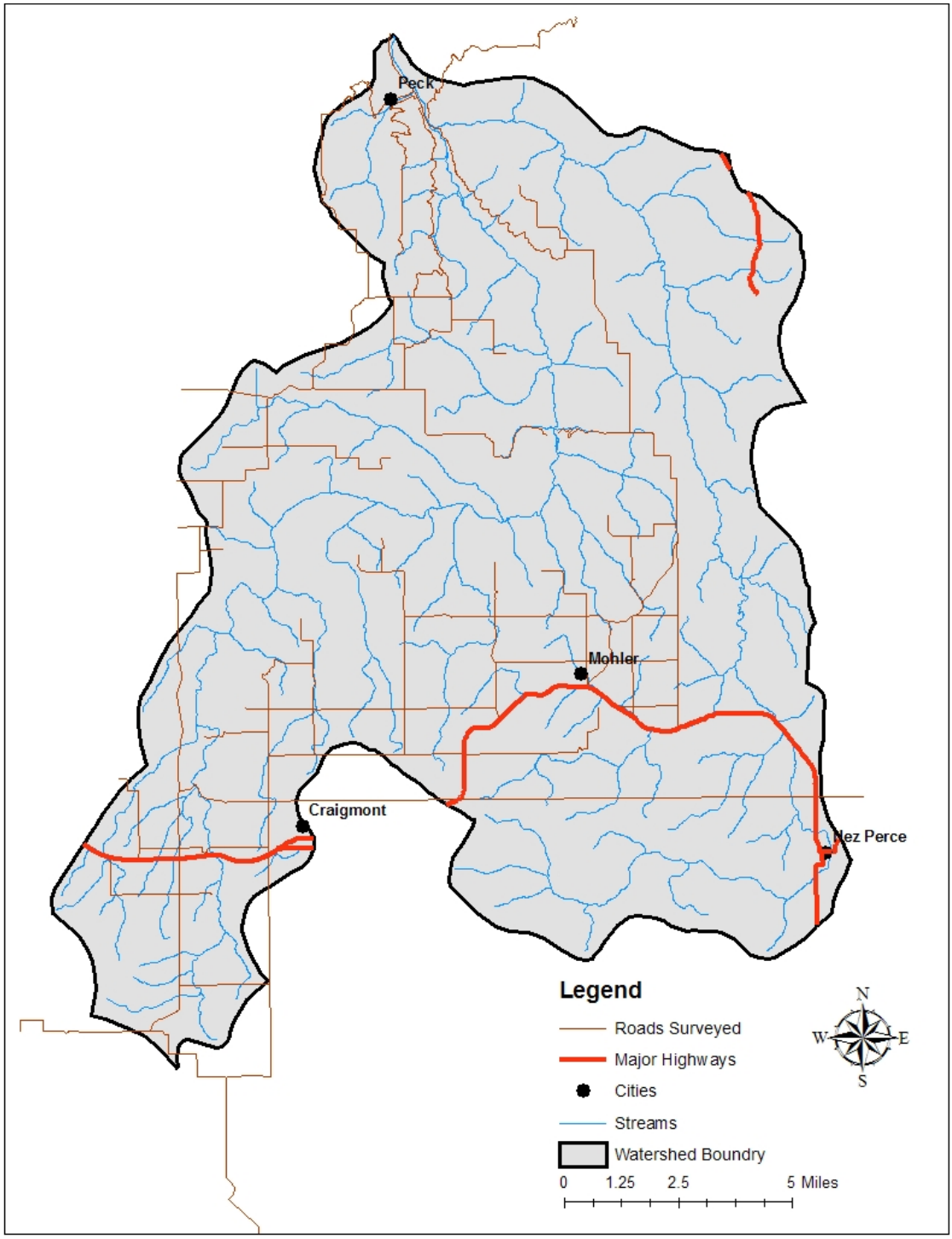
In 1985: Kucera et al (1985) identified limiting factors for anadromous fisheries to be: low summer stream flow, high summer temperatures, lack of instream cover, annual stream flow variation, and siltation. Many of these limiting factors can be attributed to the reduced riparian vegetation. Riparian vegetation contributes to various functions essential to stream health including: providing shade, thereby reducing stream temperatures, increases recruitment of large woody debris (LWD) essential to instream habitat complexity,
Increases bank stability which reduces erosion and sedimentation.

Noxious weeds

Noxious weeds are an ever-increasing threat to native ecosystems. Weeds have a variety of detrimental effects including degrading wildlife habitat, crowding out beneficial native plants, choking steams and waterways, poisoning or injuring livestock and humans, and fouling recreation sites (Pranther et al. 2002).

Weeds can affect anadromous fish habitat in many ways. Most weeds are annuals, which typically have less extensive root systems than perennial native riparian vegetation. These root systems provide stability for stream banks and reduce erosion. Weeds will also crowd out wetland plants common along stream banks and transitional areas. Many wetland plants act as filters reducing excess nutrients and trapping fine sediments before they reach the stream. Additionally due to their highly competitive life strategies, weeds can reduce recruitment of trees and shrubs which provide canopy cover that help maintain cool water temperatures.

Figure 2. Overview map of the Big Canyon Creek Watershed and location of roads surveyed.



Noxious weeds cost the U.S. $7.4 billion in lost productivity and $300 million is lost due to weeds in Idaho alone. Noxious weeds can spread at an alarming rate, increasing their acreage up to 14 percent per year (ISDA 1999). Roads are one of the primary pathways noxious weeds are spread across the landscape (Sheley et al. 2002, and Rooney et al. 2004). Weeds generally establish quicker in the disturbed, open areas along road corridors, and they often out-compete native vegetation in areas of disturbance.

Project Objectives

1) Obtain a baseline weed inventory for public roads within the watershed.
2) Identify target weeds for management.

Methods

Site Selection - Inventory was performed along all county, state, and federal roads within the Big Canyon Creed watershed. Each road was divided into segments and labeled with a unique number. Most segments followed road junctions.

Weed Groups - Weed species were organized into the following management groups established by the Clearwater Basin Weed Management Area (CBWMA) (CBWMA 2004): eradicate, control, contain, reduce, and custodial. Each of these management groups has a defined management or treatment objective (Table 1).

Table 1. Weed Groups Established by the CBWMA.

Management Group	Management Objective/Definition
Eradicate	Elimination of every individual weed and all viable seeds or propugules.
Control	Viable seeds and propagules are prevented to decrease the distribution overtime.
Contain	Weeds are geographically contained and are not increasing beyond the perimeter of infestation.
Reduce	The density or rate of spread of weeds is reduced across a geographic area.
Custodial	Infestations are treated in association with other weed activities. Either the weed is not invasive or infestation is beyond capabilities of groupings.

Table 2. Weed Cover Percentage Classes.

Code	Cover	Midpoint
T	0-1%	0.5%
0	1.1-5.0%	3.0%
1	5.1-15.0%	10.0%
2	15.1-25.0%	20.0%
3	25.1-35.0%	30.0%
4	35.1-45.0%	40.0%
5	45.1-55.0%	50.0%
6	55.1-65.0%	60.0%
7	65.1-75.0%	70.0%
8	75.1-85.0%	80.0%
9	85.1-95.0%	90.0%
A	95.1-99.0%	97.0%
X	99.1-100.0%	99.5%

Site inventory - Inventory data collected included presence/absence of weed species and percent cover of species present (Table 2). The inventory collected was completed by road segment, and weed locations were documented using the odometer of a vehicle.

Results

In 2004, a total of 199.4 miles of road were surveyed in the Big Canyon Creek watershed. Overall, 16 weed species were observed ranging from 0.1 to 144.6 miles of road segments (Table 3). Total lengths for all weed segments observed are available in Table 3. Canada thistle (*Cirsium arvense*) and St Johns Wort (*Hypericum perforatum*) were widely distributed, being observed along 144.6 and 105.0 linear miles of road segments, respectively (Appendix 3 and 4). The distribution of other weeds will be discussed by groups as defined by the CBWMA.

Table 3. Weed Species and Length of Infestation Present in the Big Canyon Watershed.

Weed Species	CBWMA Group	Length (miles)
Canada Thistle	Reduce	144.6
Yellowstar Thistle	Reduce	19.5
Spotted Knapweed	Reduce	6.1
	Total	**170.2**
Sulfur Cinquefoil	Custodial	43.2
Field Bindweed	Custodial	37.4
	Total	**80.6**
Tansy Ragwort	Eradicate	6.8
Yellow Toadflax	Eradicate	0.1
	Total	**6.7**
Poison Hemlock	Contain	2.0
Scotch Thistle	Contain	1.3
Hybrid Knotweed	Contain	0.1
	Total	**3.4**
Dalmatian Toadflax	Control	0.4
	Total	**0.4**
St. John's Wort	Other Species	**105.0**
Hounds Tongue	Other Species	**10.9**
Common Tansy	Other Species	**10.9**
Bull Thistle	Other Species	**0.3**
Common Burdock	Other Species	**0.2**
	Total	**127.3**

Reduce

Canada thistle, yellowstar thistle (*Centaurea solstitialis*), and spotted knapweed (Centaurea *maculosa*) were the three species observed and classified in the reduce group. Overall, the three were observed along 170.2 miles of road (Table 3.) A map or their distribution throughout the watershed is available in Appendix 3.

Custodial

Sulfur cinquefoil (*Potentilla recta*) and field bindweed (*Convovusus arvensis*) were the two species classified in the custodial group; they were observed along 80.6 miles of road (Table 3). A map of their distribution throughout the watershed is available in Appendix 4.

Eradicate

Tansy ragwort (*Senecio jacobacea*), and yellow toadflax (*Linaria vulgaris*) were the two species classified in the eradicate group. Combined, they were observed along 17.8 miles of road (Table 3). A map of their distribution throughout the watershed is available in Appendix 5.

Contain

Poison hemlock (*Conium maculatum*), scotch thistle (*Onopordum acanthium*), and hybrid knotweed (*Polygonum bohemicum*) were the three species observed from the contain group. They were observed along 3.4 miles of road (Table 3). A map of their distribution throughout the watershed is available in Appendix 6.

Control

Dalmation toadflax (*Linaria dalmatica*) was the only species observed in the control group. It was observed along 0.4 miles of road (Table 3). A map of its distribution throughout the watershed is available in Appendix 7.

Other species

St. Johns Wort, bull thistle (*Cirsium vulgare*), hounds tongue (*Cynoglossum officinale*), common burdock (*Arctium minus*), and common tansy (*Tanecetum vulgare*) were observed along 116.4 miles of road. These introduced species are not addressed by the CBWMA, but were noted during the weed surveys.

Discussion/Recommendations

We recommend the eradication of all weed species distributed along less than 10 road miles through out the entire watershed. These species are listed in Table 3. Reducing their distribution along these roads may slow or prevent further distribution. Eradication methods might include chemical, mechanical, or biological means.

Due to limited resources and available methods of control, widely distributed weeds will be approached differently (Table 3). For these species, we recommend efforts to slow, not eliminate, distribution. Treatments may include: treating the leading edge of infestations, eradication of small isolated infestations, or use of bio controls over the entire distribution. Species with extensive distributions should be treated by methods that treat at an appropriate scale, such as biological controls. These species include: Canada thistle, yellowstar thistle, spotted knapweed, and st. johns wort.

We will use this document to help coordinate efforts with other weed control entities. This document will be provided to county road departments, and the CBWMA, and the Nez Perce Tribe. The document will also be available to private, county, state, federal, and tribal entities for use in controlling and managing weeds in the Big Canyon Creek watershed. Due to the collection methodology (driving along major roadways), this document should not be used for presence/absence, distribution or abundance of weeds outside of this context.

Acknowledgements

The following assisted in this project:

- Nez Perce Tribe Biocontrol Center
- Nez Perce Tribe Land Services

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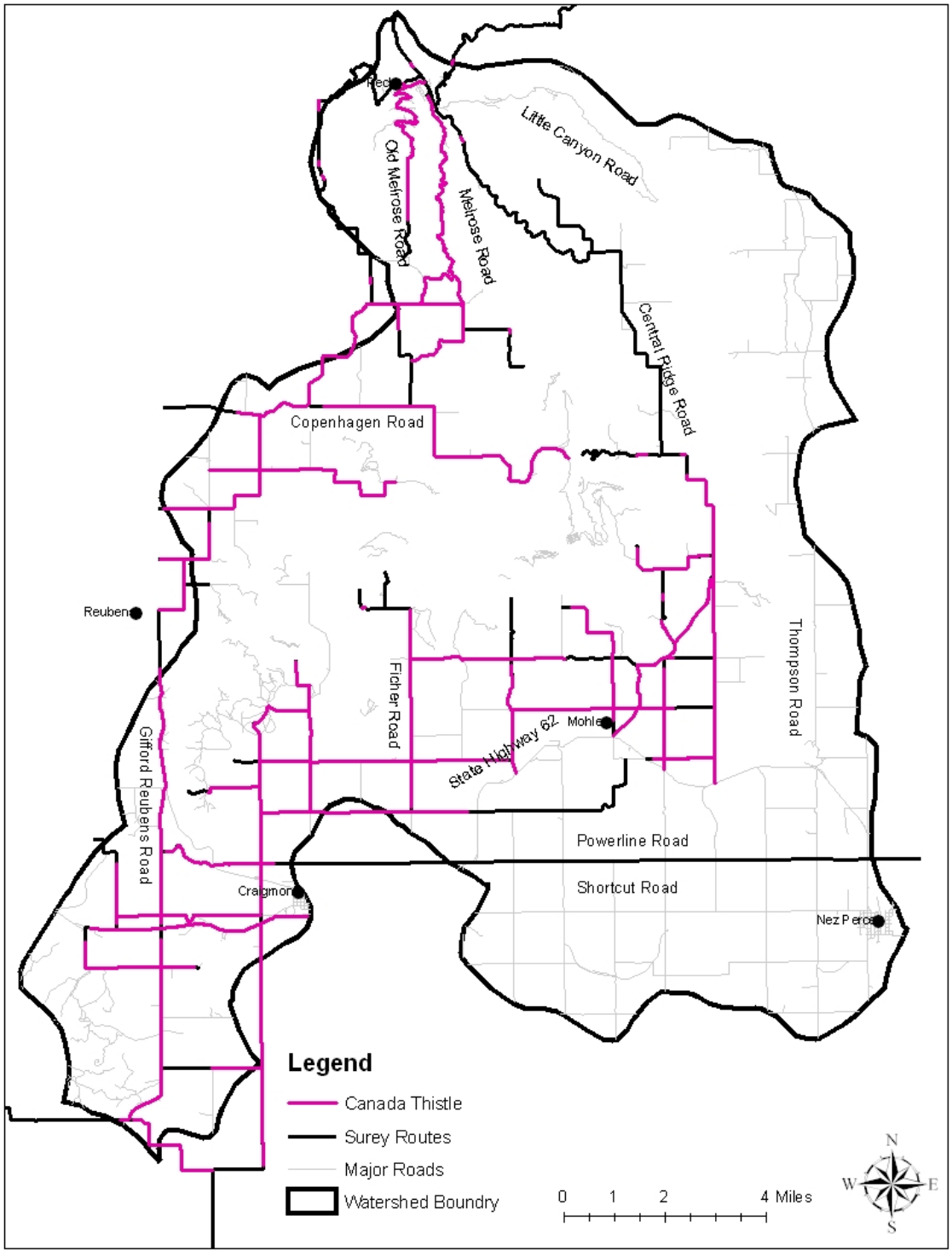
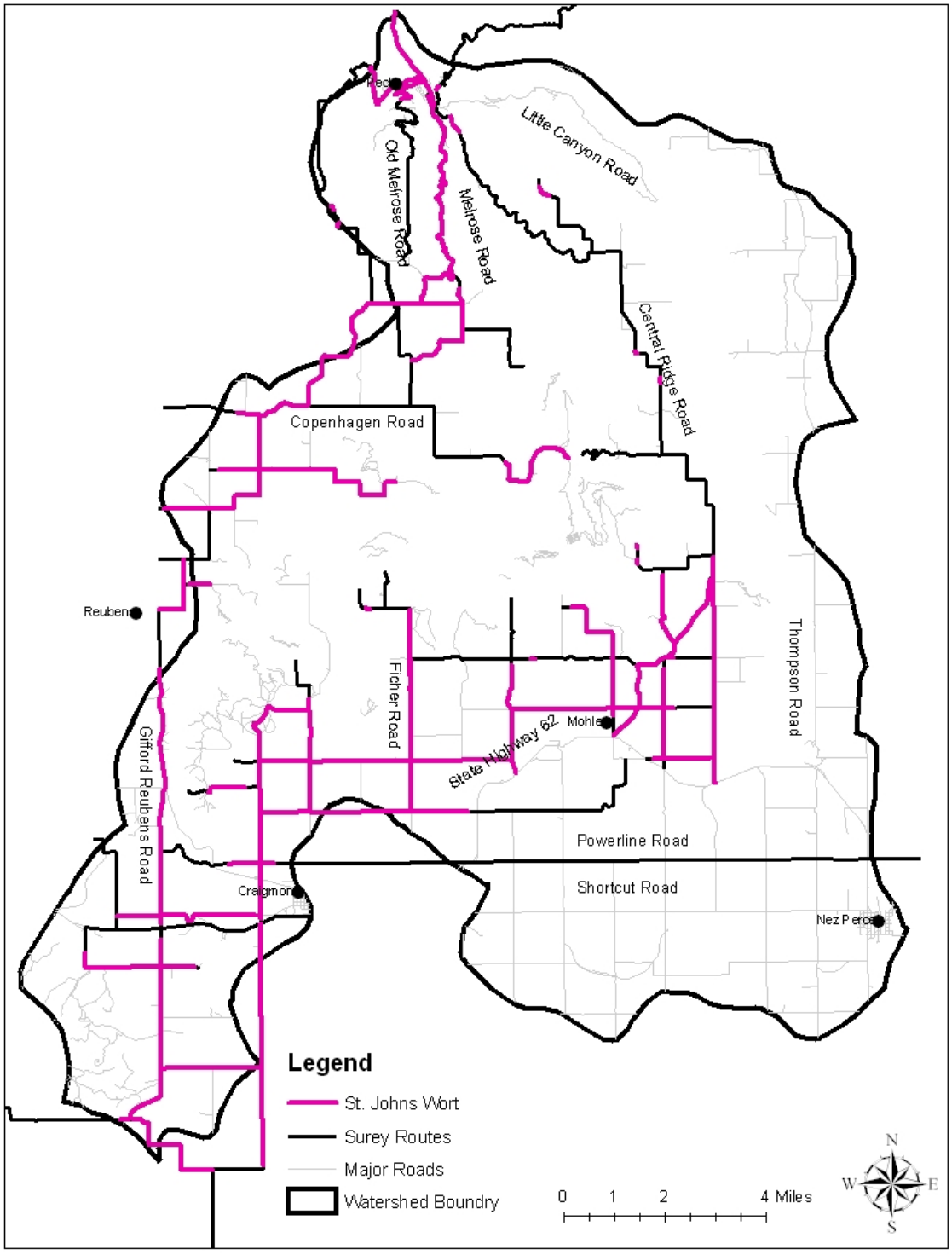
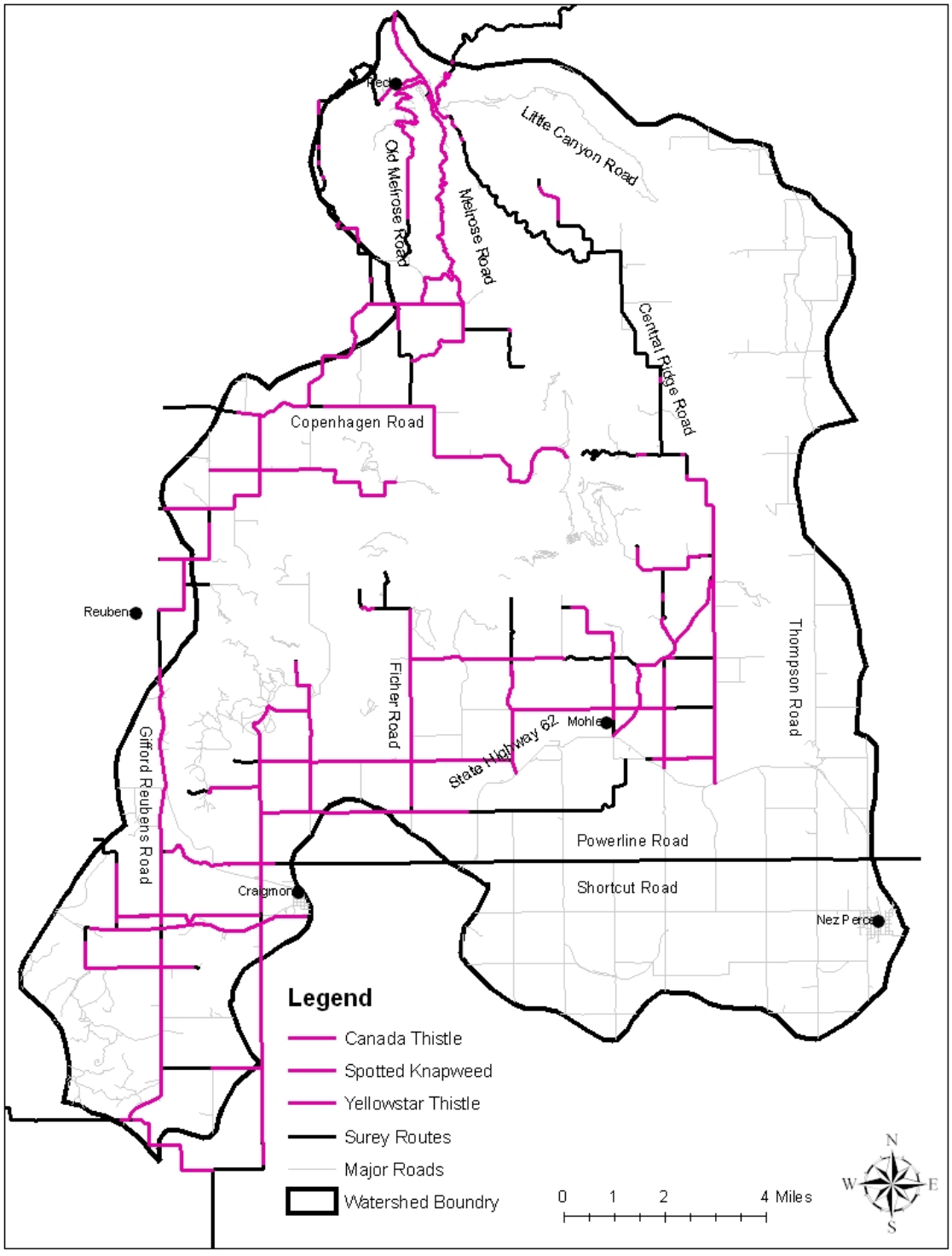
Appendix 1. Distribution of Canada Thistle in the Big Canyon Creek watershed



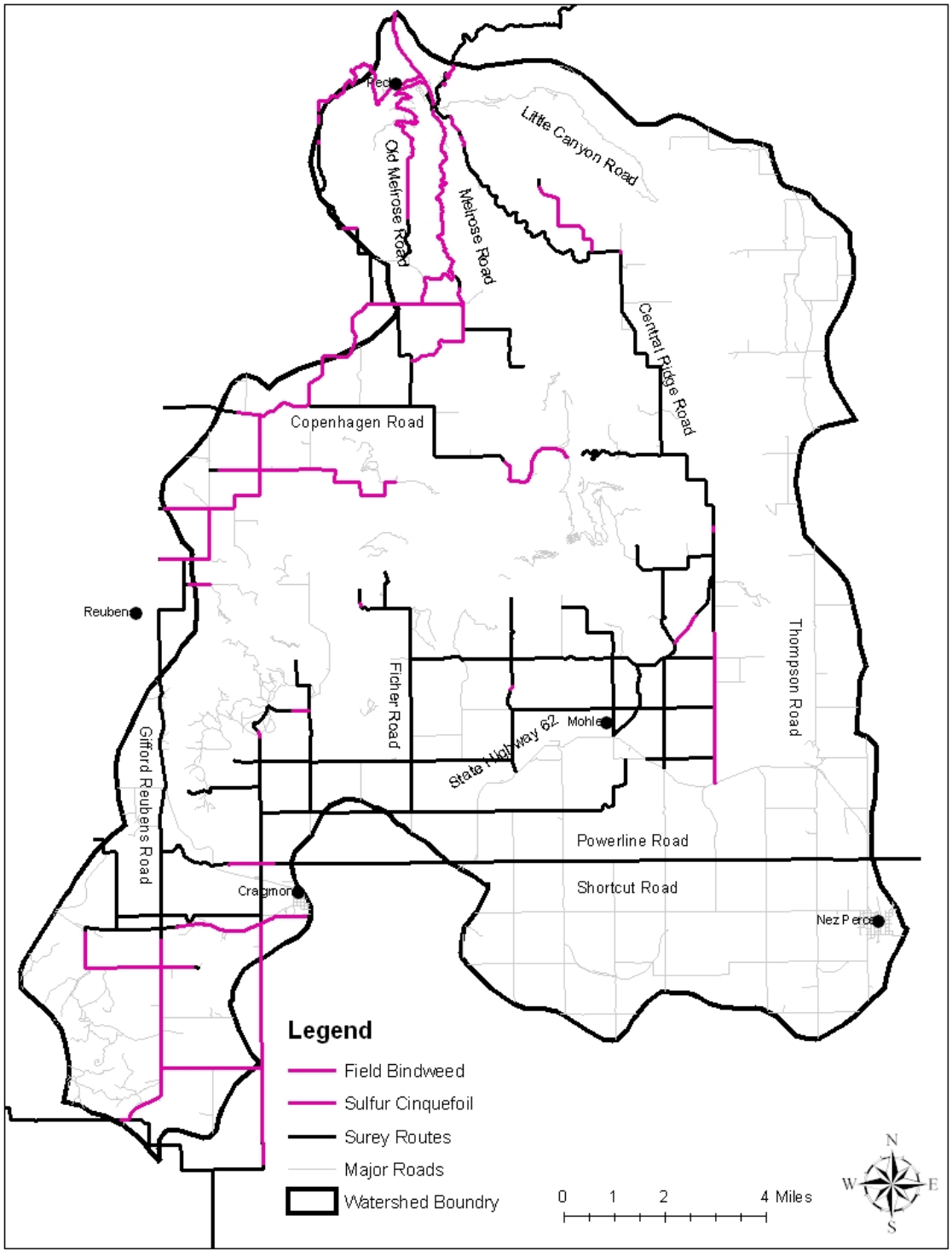
Appendix 2. Distribution of St. John's Wort in the Big Canyon Creek watershed



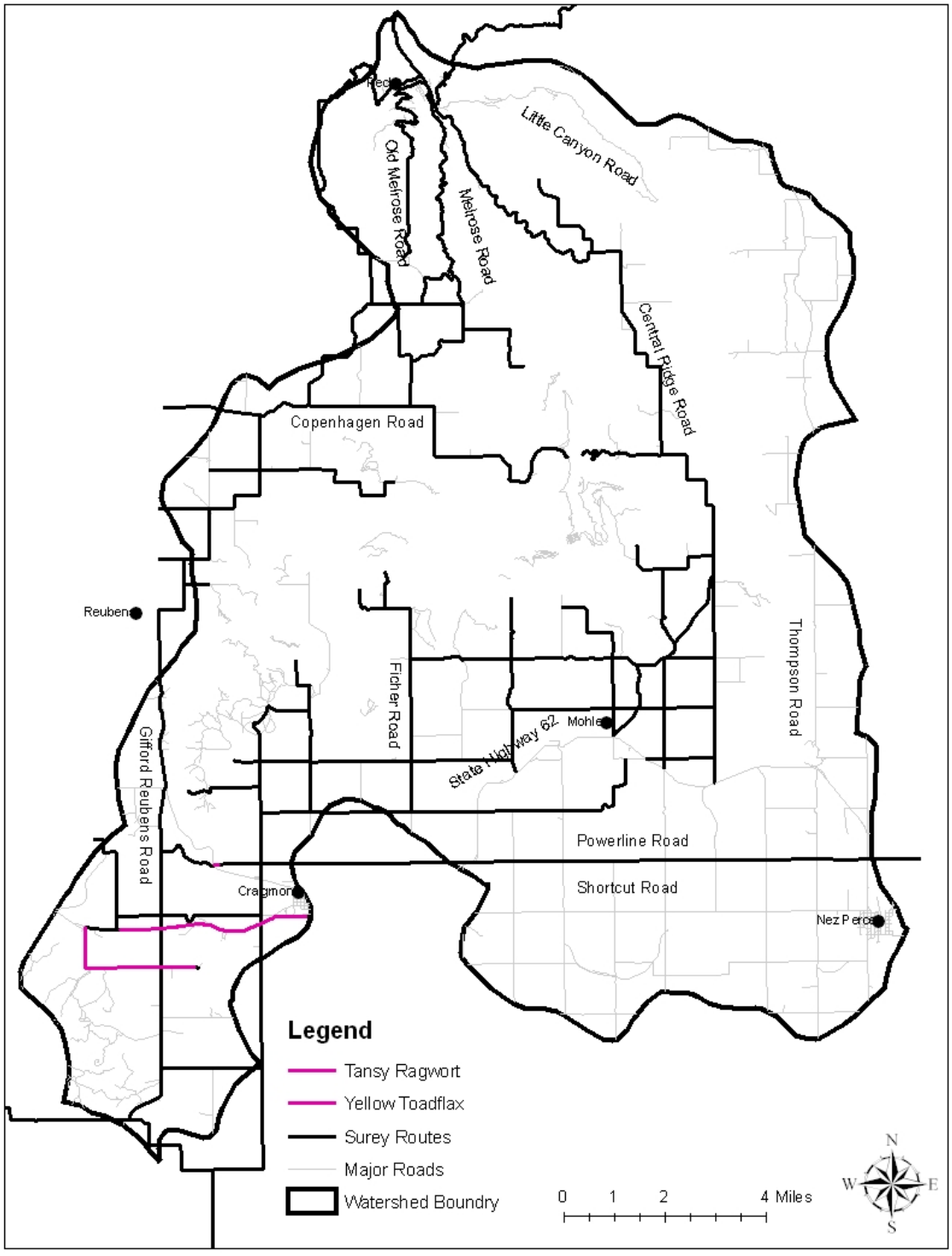
Appendix 3. Distribution of Weeds Designated as “Reduce” by the CBWMA in the Big Canyon Creek watershed



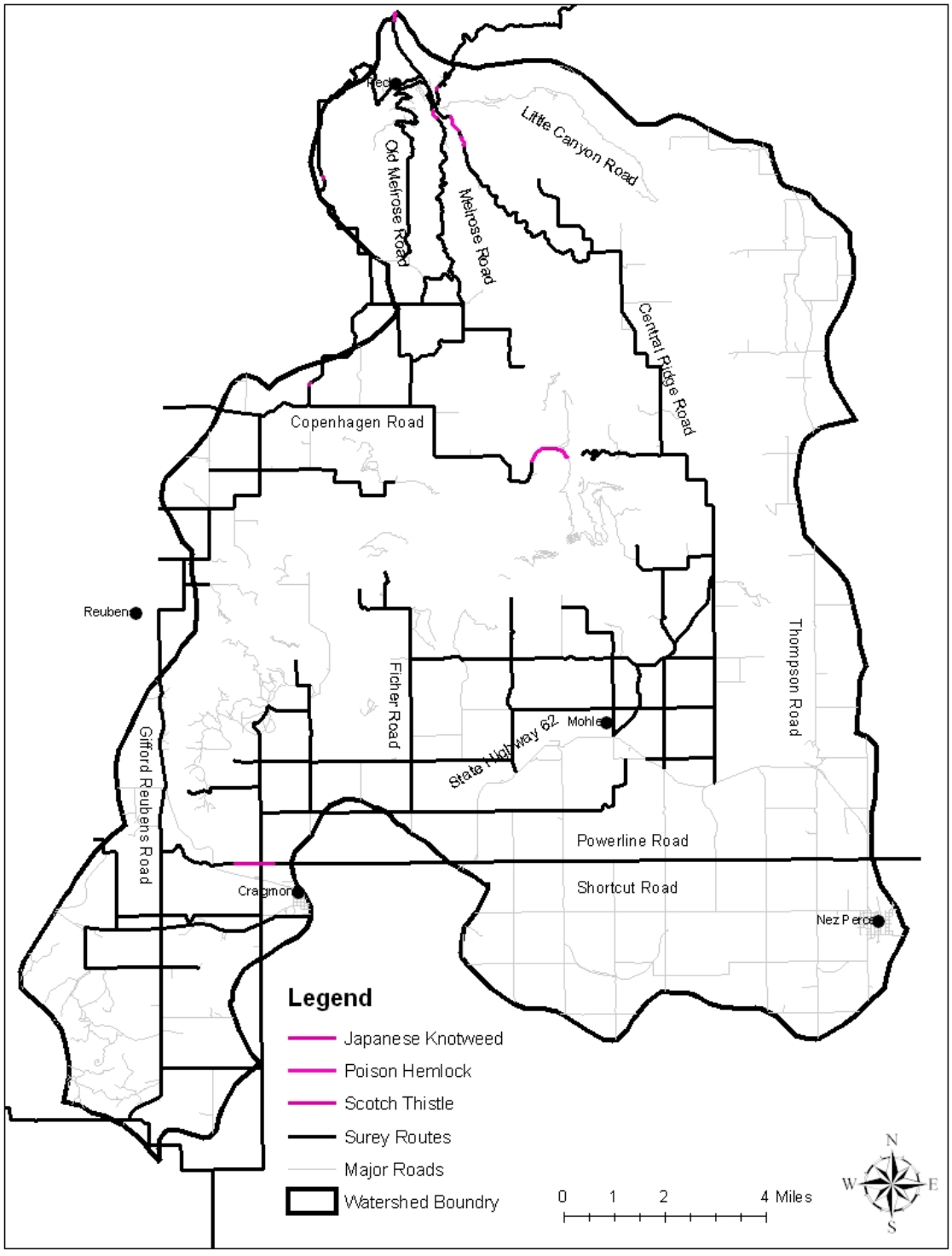
Appendix 4. Distribution of Weeds Designated as “custodial” by the CBWMA in the Big Canyon Creek watershed



Appendix 5. Distribution of Weeds Designated as “Eradicate” by the CBWMA in the Big Canyon Creek watershed.



Appendix 6. Distribution of Weeds Designated as “Contain” by the CBWMA in the Big Canyon Creek watershed



Appendix 7. Distribution of Weeds Designated as “Control” by the CBWMA in the Big Canyon Creek watershed