

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

Sandy River Delta Riparian Reforestation

Bonneville project number, if an ongoing project 9062

Business name of agency, institution or organization requesting funding

USDA Forest Service, Columbia River Gorge National Scenic Area

Business acronym (if appropriate) USFS-CRGNSA

Proposal contact person or principal investigator:

Name	Virginia Kelly
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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Avifauna Northwest	18000 SE Vogel Rd	Portland, OR 97009	Bob Altman
Vegetation clearing	subcontractor	depends on bids	
Spraying	subcontractor	depends on bids	

NPPC Program Measure Number(s) which this project addresses.

11.3E.1

NMFS Biological Opinion Number(s) which this project addresses.

Biological Opinion, or other Endangered Species Act requirements, enter the Action Number and Biological Opinion Title.

N/A

Other planning document references.

The Sandy River Delta Plan was developed with cooperation of many agencies, including adjacent land managing agencies. Adjacent land managing agencies included Oregon Division of State Lands, Oregon Parks and Recreation Department, Oregon Department of Transportation, Multnomah County and METRO. Other involved agencies included the Federal Highways Administration, Bonneville Power Administration, US Fish and

Wildlife Service, Oregon Department of Fish and Wildlife, the Federal Aviation Administration and Port of Portland.

Tribes consulted included the Confederated Tribes of the Warm Springs, Confederated Tribes of the Umatilla, Yakama Indian Nation, Nez Perce Tribe, Confederated Tribes of the Grande Ronde and Confederated Tribes of the Siletz.

The project is called for specifically in:

- Sandy River Delta Watershed Analysis (page 16)
- Sandy River Delta Plan (pages 17-18)
- Sandy River Delta Plan Final Environmental Impact Statement (page 2-32)
- Columbia River Gorge National Scenic Area Management Plan (page III-38)

Riparian Enhancement is also a goal of the:

- Northwest Forest Plan (page B-11)

Subbasin.

Sandy River and Lower Columbia (project is at confluence of Sandy River with Columbia River)

Short description.

Restore 250 acres of rare Columbia River floodplain ‘gallery’ riparian forest (dense, unbroken stands of black cottonwood, willow, ash). Reforestation will improve habitat for riparian forest species, particularly neo-tropical migrant birds, herptiles, herons and bald eagles.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
_____	Anadromous fish	_____	Construction	x	Watershed
_____	Resident fish	_____	O & M	_____	Biodiversity/genetics
x	Wildlife	_____	Production	_____	Population dynamics
_____	Oceans/estuaries	_____	Research	+	Ecosystems
_____	Climate	+	Monitoring/eval.	_____	Flow/survival
_____	Other	x	Resource mgmt	_____	Fish disease
_____		_____	Planning/admin.	_____	Supplementation
_____		_____	Enforcement	+	Wildlife habitat en-
_____		_____	Acquisitions	_____	hancement/restoration

Other keywords.

N/A

Section 3. Relationships to other Bonneville projects

If you need more rows, press Alt-Insert from within this table.

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Briefly describe measurable objectives and the tasks needed to complete each objective. Use Column 1 to assign numbers to objectives (for reference in the next table), and Column 3 to assign letters to tasks. Use Columns 2 and 4 for the descriptive text. Objectives do not need to be listed in any particular order, and need only be listed once, even if there are multiple tasks for a single objective. List only one task per row; if you need more rows, press Alt-Insert from within this table.

Obj 1,2,3	Objective	Task a,b,c	Task
1 *	Site Preparation	a	Clear unwanted vegetation
		b	Apply <i>Rodeo</i> herbicide as needed
2	Plant seedlings or cuttings	c	Collect plant stock
		d	Coordinate volunteer planters
		e	Choose planting dates
		f	Oversee planting
3	Maintain Seedlings	g	Grub unwanted vegetation/Mulch
4	Monitor Planting	h	Establish photo monitoring points
		i	Measure seedling survival
		j	Alter site/prep & planting methods
5 *	Monitor Wildlife Populations	k	Neotropical baseline exists
		l	Count neo-tropicals annually

* BPA funding is requested only for these objectives. Other objectives would be funded by the Forest Service and other partners.

Objective schedules and costs

If you need more rows, press Alt-Insert.

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	07/1999	10/2003	51.0 *
2	09/1999	12/2003	31.0
3	07/2000	12/2003	8.0 (avg)
4	09/1999	10/2003	3.0
5	05/1999	05/2003	7.0 *

* BPA funding is requested only for these objectives. Other objectives would be funded by the Forest Service and other partners.

Schedule constraints.

Completion date.

2003

Section 5. Budget

List FY99 budget amounts for each category. If an item needs more explanation, provide it in the Note column. If the project uses PIT tags, include the cost (\$2.90/tag). **Be sure to enter a total on the last line: this is the amount of your budget request.**

Item	Note	FY99
Personnel	Project Management	\$2,000
Fringe benefits	N/A: included in personnel costs	0
Supplies, materials, non-expendable property	Plants: funded by Forest Service and other partners. Value: \$12,000	0
Operations & maintenance	N/A year 1. Funded by partners outyears	0
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	N/A	0
PIT tags	# of tags: N/A	0
Travel	Vehicles: funded by FS. Value \$750	0
Indirect costs	N/A	0
Subcontracts	Spraying, clearing	\$19,500
Other	N/A	0
TOTAL		\$21,500

Note: only funds requested of BPA are tabulated. Total project value year 1 = \$33,250

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	\$21,500	\$21,500	\$21,500	\$21,500
O&M as % of total	6.5%	10%	11%	13%

Note: only funds requested of BPA are tabulated.

Average total project value outyears = \$38,600 per year (includes maintenance costs).

O&M: Task not funded by BPA; so percent shown is of total project cost; not of BPA funding request.

Section 6. Abstract

Proposed Action: Restore 250 acres of ‘gallery’ riparian forest (dense, unbroken stands of black cottonwood, willow, ash) which have been extensively cleared and invaded by undesirable species. Riparian forest habitat has almost entirely disappeared from this stretch of the Columbia, and what remains is generally patchy. The Delta represents one of the very best opportunities to re-establish a large block of dense, riparian forest.

The desired future condition is 600 acres of riparian forest and shrub-scrub community. This proposal targets 250 acres, or 50 acres per year for five years, because the work can be reasonably accomplished with current staffing levels.

Expected Benefits: Improve habitat for riparian forest species, particularly neo-tropical migrant birds, amphibians, herons and bald eagles.

Mitigation: Replace riparian forest habitat inundated above Bonneville Dam (in-kind, not in-place).

Methods: Site preparation and planting methods are based on previous Forest Service experience.

Outcomes: A 5 year plan which plants 50 acres per year in native riparian forest tree and shrub species (a total of 250 acres planted in 5 years). 50 plus acres per year maintained. Annual reports on planting success and neo-tropical monitoring.

Monitoring:

1. Annual photo documentation of reforestation to build long term visual record of reforestation results.
2. Annual measurement of planting success, and evaluation of any causes of planting failure. Corrective action taken as needed.
3. Annual population counts of neo-tropical migrants to determine affect on wildlife populations.

Section 7. Project description

a. Technical and/or scientific background.

Regional History: The Columbia River hydropower system massively altered the river's riparian habitat. Bonneville Dam inundated most of the floodplain riparian habitat in the Columbia Gorge. (Columbia Tributaries East Watershed Analysis, USDA Forest Service 1998 (in progress)). Downstream of Bonneville Dam, the Columbia River dam system massively altered flood patterns, the predominant natural disturbance regime. In addition, the extensive pre-European settlement wetlands, prairies and riparian forests of the lower Columbia River have been cleared, diked, drained, farmed and urbanized (Sandy River Delta Watershed Analysis, USDA Forest Service, 1994). The remaining riparian habitat is primarily patchy, narrow strips along stream courses (Altman).

Site Significance: The 1400 acre Sandy River Delta is the last large undeveloped remnant of Columbia River floodplain in the Portland area. The Delta has enormous potential for wetland, prairie and riparian forest restoration.

Site History: Sandy River Delta is undeveloped, but hardly undisturbed. Before European settlement, it was largely forested, with some level "prairies", small lakes and wetlands. Beginning in the late 1800's, forests were cleared for grazing. Later, ditches were installed to drain wetlands. Prior to the Columbia River damming, annual spring floods in the 800,000 cfs range were common, with periodic large floods over 1,000,000 cfs. Now, floods in the 200,000 cfs range are uncommon (Sandy River Delta Watershed Analysis, USDA Forest Service, 1994). As a result, the land is massively altered. It's natural disturbance regime was altered by the dam system, and the land has been cleared, drained, diked, grazed, seeded and invaded by undesirable species.

Location/Ownership: The Delta, located just east of the Portland, Oregon metropolitan area, is located at the confluence of the Sandy and Columbia Rivers. The Forest Service, CRGNSA, bought the Delta in 1991 and began master planning in 1992.

Watershed Analysis: A watershed analysis was completed as part of the master planning process (Sandy River Delta Watershed Analysis, USDA Forest Service, 1994). Sandy River Delta is in the watersheds of both the Columbia and Sandy Rivers; clearly the watershed analysis could not include the entire watersheds of both rivers. Given the Delta's floodplain character, the Columbia River lowlands were considered a more appropriate watershed analysis context than the Sandy River uplands. Criteria for a "vicinity" watershed area were provision of a site context, and enough upland area to address connectivity. The chosen watershed analysis area included Columbia River lowlands on both sides of the river for several miles up and downstream of the Delta; uplands of the local Broughton Bluff watershed; and direct, short, cliff Columbia River tributaries on the Washington side.

The watershed analysis indicated that the extensive pre-European settlement wetlands, prairies and riparian forests of the analysis area have been cleared, diked, drained, farmed and urbanized. Beginning in the 1850's, the generally forested Columbia River lowlands

were cleared for farming and for towns. While farms had some wildlife habitat value, these are now disappearing as the land becomes intensely urbanized. As a result, wetland, meadow, and riparian forest habitats are increasingly scarce in the analysis area.

Management Direction: The completed comprehensive management plan (Sandy River Delta Plan and EIS, 1996) envisions wetland, riparian forest, upland forest, upland meadow and shrub-scrub restoration, along with moderate recreation and natural resource interpretation.

The Sandy River Delta Plan divided the 1400 acre parcel into two distinct management areas. The northern 600 acre “Sundial Island” will be primarily reforested with riparian tree species to create a dense “gallery” old growth riparian forest. A shrub-scrub community will be created under Bonneville Power Administration powerlines due to vegetation height restrictions. Wetland restoration and upland meadow enhancement are desired on the southern 800 acre “Thousand Acres”.

Proposed Action: Restore 250 acres of ‘gallery’ riparian forest (dense, unbroken stands of black cottonwood, willow, ash) which have been extensively cleared and invaded by undesirable species. The Sandy River Delta Watershed Analysis indicated riparian forest habitat has almost entirely disappeared from this stretch of the Columbia, and what remains is generally patchy. The Delta represents one of the very best opportunities to re-establish a large block of dense, riparian forest.

The desired future condition is 600 acres of riparian forest and shrub-scrub community. This proposal targets 250 acres, or 50 acres per year for five years, because the work can be reasonably accomplished with current staffing levels.

1994 Fish and Wildlife Program Goals: Riparian reforestation will improve habitat for a community of native plants and animals. Reforestation will benefit the great blue heron, raptors (including bald eagles), and herptiles (including the sensitive red-legged frog). There is potential for a future reintroduction of the Western pond turtles. Habitat will be restored for neo-tropical migrants, some of which are extirpated in Oregon. The low elevation riparian forest is especially important to spring breeding migrants, who cannot reach the snow covered upper elevations. In the long term, site reforestation will benefit adjacent waterways, and provide shade along anadromous rivers (Sandy and Columbia Rivers).

Mitigation: Riparian reforestation will mitigate riparian forest losses upstream of Bonneville dam. As such, in-kind, not in-place mitigation would result.

Partners: The Forest Service initiated a pilot restoration project in November, 1997 with partners Friends of the Trees, American Forest’s Global Releaf program, and the National Fish and Wildlife Foundation. One hundred volunteers planted three acres in one day with Oregon ash, black cottonwood and willow. A second spring planting is planned.

Key Personnel: Key restoration personnel were instrumental watershed analysis and master planning team members. These personnel include Robin Dobson

(Botanist/Ecologist and restoration project manager), Virginia Kelly (Planning Team Leader) and Richard Larson (Fish and Wildlife Biologist).

b. Proposal objectives.

Objective 1. Site Preparation: Clear unwanted vegetation from 50 acres per year, using a variety of methods (mechanical, prescribed fire, spot herbicide treatment, etc.).

Outcome: 50 acres prepared for planting annually.

Objective 2. Planting: Plant 50 acres per year of native riparian forest tree and shrub species. Utilize volunteers to build ownership in the local community and to leverage funds. Adequately train and supervise volunteers to ensure quality planting. Collect native plant stock through purchase or cuttings. The Forest Service has some nursery stock being grown under contract for this site.

Outcome: 50 acres planted annually.

Objective 3. Maintain Seedlings: Maintain acreage planted in previous years. Either grub unwanted vegetation or mulch seedlings to reduce competition. Three years of intensive maintenance are expected for any planted area, so acreage in this task will grow by 50 acres each year until year 3. Utilize volunteers to maintain seedlings to build ownership and to leverage funds.

Outcome: 50 acres + maintained annually, up to 150 acres.

Objective 4. Monitor Planting: a) Photo document long term progress of reforestation. b) Determine annual success of planting; determine any causes of planting failure. c) Correct causes of planting failure.

Outcomes: Photo monitoring slides/photos. Annual report on planting success and altered planting methods.

Objective 5. Monitor Wildlife Populations: Determine whether reforestation benefits wildlife as expected. Monitor neo-tropical migrant populations because they are target species, and because 4 years of baseline monitoring exist.

Outcome: Annual neo-tropical migrant population report.

c. Rationale and significance to Regional Programs.

1994 Fish and Wildlife Program Goals: Riparian reforestation will improve habitat for a community of native plants and animals. Reforestation will benefit the great blue heron, raptors (including bald eagles), and herptiles (including the sensitive red-legged frog). There is potential for a future reintroduction of the Western pond turtle. Habitat will be restored for neo-tropical migrants, some of which are extirpated in Oregon. The low elevation riparian forest is especially important to spring breeding migrants, who cannot reach the snow covered upper elevations. In the long term, site reforestation will benefit adjacent waterways, and provide shade along anadromous rivers (Sandy and Columbia Rivers).

Mitigation: Riparian reforestation will mitigate riparian forest losses upstream of Bonneville dam. As such, in-kind, not in-place mitigation would result.

Technology Transfer

To our knowledge, no one else has tried to restore such a large expanse of riparian bottomland forest along this stretch of the Columbia for the purpose of native plant and animal community enhancement. Our problems with invasive and noxious weeds are common in this region. Our site prep and planting experiments (burn/plant, spray/plant, burn/spray/plant, etc.) would have applicability for other land managers in the area.

d. Project history

N/A. This is not a continuing BPA project.

e. Methods.

I. TASKS

1) Research Native Plant Communities (task completed by Forest Service in 1997): The Forest Service proposes to re-establish the native community of the Columbia River bottomland riparian forest. The Forest Service researched current plant inventories of undeveloped Columbia bottomlands (Christy), early explorer journals and historical photos, and interviewed long time residents for references to the pre European settlement plant communities (Conley). Records of the exact composition of the native forest are not available, but numerous sources indicated a native community of black cottonwood, Oregon ash, big leaf maple, various willow, and native shrubs and forbs. Most historic sources discuss the tree layer, fewer discuss the shrub layer, and discussion of the forb layer is almost non-existent.

2) Develop Detailed Reforestation Design (task completed by the Forest Service in 1997): A detailed reforestation design stratified the land by slope, soils and utility line requirements. Approximate compositions of tree and shrub species were outlined. Native forbs are expected to emerge from the seed bank.

3) Site Preparation (Objective 1): The Forest Service would initiate a series of site preparation and planting experiments to find successful methods to re-establish native plants in a highly altered and invaded landscape. Plots would be established for the following strategies: burn/plant, spray/plant, burn/spray/plant, plant through existing vegetation, mow/spray/plant. Burning is a viable tool, but will require a high degree of planning and coordination. Burning will be constrained by extreme winds, high humidity, and proximity to an urban area and to the Troutdale airport. Subcontractors would be hired to mechanical brush clearing and herbicide spraying. *Rodeo* herbicide would be applied only as needed in spot treatments and only to resprouting stems of cleared plants.

Site preparation was a significant cost (to the Forest Service) in a pilot reforestation project. Forest Service funding for this task can only allow small annual acreages to be prepared for planting. Forest Service funding cannot support reforestation on the desired scale. BPA funding is requested for this objective.

4) Planting (Objective 2): The Forest Service and partner Friends of Trees (a successful Portland-based volunteer tree planting organization) would select planting areas and dates. Trees and shrubs would be planted in the compositions described in the detailed Reforestation Design. Forbs are expected to emerge from the native seed bank. Dense planting is desired to create shade as a means to control shade-intolerant invasive plants. A mixture of whips, container stock and on-site cuttings would be planted.

Friends of the Trees would train and manage volunteer planters with Forest Service oversight. Over 100 volunteers planted 1600 trees in a November 1997 pilot project. Friends of Tree and the Forest Service intend to establish a long-term partnership to restore the Sandy River Delta riparian forest.

The National Fish and Wildlife Foundation and American Forests “Global Releaf” program provided cash contributions for a 1997/1998 pilot reforestation project. The Forest Service intends to build on the success of the pilot project to request future funds for tree purchase and planting. Friends of the Trees intends to pursue further grants to purchase trees.

BPA funding is **not** requested for this objective. Friends of the Trees and other partners such as the National Fish and Wildlife Foundation and American Forests would fund this objective.

5) Maintain Seedlings (Objective 3): Friends of Trees has indicted willingness to maintain seedlings planted by their group (grubbing, mulching, etc). BPA funding is **not** requested for this objective.

6) Monitor Seedlings (Objective 4): a) Visual documentation of long term reforestation progress would be created through annual collection of photos and slides. The Forest Service would establish one representative photo monitoring point per 50 acre planting area. A minimum of 4 slides and 4 photos per year (one photo and one slide to east, south, west, north) would be collected. Photos/slides would be maintained in binder in Forest Service office. b) Seedling survival would be measured twice per year. Causes of seedling failure (e.g. poor planting methods, poor planting conditions, poor stock) would be assessed. Site preparation or planting methods would be altered as monitoring indicates. An annual report would document results.

BPA funding is **not** requested for this objective. The Forest Service would fund this objective.

7) Monitor wildlife populations (Objective 5): Neotropical migrant bird species are proposed as the indicator wildlife population. A neotropical monitoring system was

established at Sandy River Delta in 1994, and four years of data have been collected. Bob Altman of Avifuana Northwest (the existing contractor) would continue the monitoring program.

Since Forest Service funds are declining, BPA funds are requested to ensure continued survival of the monitoring program.

II. EXPECTED RESULTS

The long term expected result is re-establishment of the Columbia River floodplain riparian forest. The Sandy River Delta reforestation will create a large block of habitat which is now regionally scarce. Riparian reforestation will improve habitat for neotropical migrants (some of which are extirpated in Oregon), herptiles (including the sensitive red-legged frog and potentially for Western pond turtles), the great blue heron, raptors (including bald eagles) and a community of native plants and animals. In the long term, site reforestation will benefit adjacent waterways, and provide shade along anadromous rivers (Sandy and Columbia Rivers).

To our knowledge, no one else has tried to restore such a large expanse of riparian bottomland forest along this stretch of the Columbia for the purpose of native plant and animal community enhancement. Our problems with invasive and noxious weeds are common in this region. Our site prep and planting experiments (burn/plant, spray/plant, burn/spray/plant, etc.) would have applicability for other land managers in the area.

III. RISKS/ENVIRONMENTAL PROTECTION REQUIREMENTS

The existing wildlife habitat quality is quite low, due to invasive plant species. Temporary disruption to wildlife would be more than compensated by enhanced habitat.

No endangered or threatened plant and animal species are presently located in the project area, and none will be affected by the planting project.

Forest Service guidelines for herbicide application would be strictly followed to ensure operator, public, fish and wildlife safety. Only *Rodeo* (a glyphosphate approved for riparian areas) would be used. Glyphosphate breaks down quickly, and has been shown non-toxic to fish and wildlife. Signs would be posted to inform the public of herbicide application dates and locations.

f. Facilities and equipment.

- Mechanical clearing: The Forest Service has had great success with a “hydro-ax” which is hired by contract.
- Herbicide spraying: The Forest Service hires contractors for this task.

- Planting tools: the Forest Service has adequate planting tools for use by volunteers such as shovels, planting shovels, polaskis, McClouds, rock bars, rebar.
- Vehicles: the Forest Service has adequate vehicles to carry equipment.
- Monitoring equipment: the Forest Service has adequate equipment for photo monitoring. The neotropical monitoring contractor supplies his own equipment.
- The Forest Service has adequate office space and computers; no lab space is needed.

g. References. Altman, Bob. 1994, 1995, 1996, 1997. Neotropical Migratory Landbird use of Riparian Forest and Meadows of the Sandy River Delta. Annual reports. Unpublished. On file at Columbia River Gorge National Scenic Area, Hood River, Oregon.

Christy, John. A. and Judy A. Putera. 1992. Lower Columbia River Natural Area Inventory. Oregon Natural Heritage Program. Salem, Oregon.

Columbia River Gorge Commission, and USDA Forest Service, Columbia River Gorge National Scenic Area. 1992. Management Plan for the Columbia River Gorge National Scenic Area. White Salmon, Washington.

Conley, Mark. 1997. Historic Native Vegetation of the Sandy River Delta. Unpublished. On file at Columbia River Gorge National Scenic Area, Hood River, Oregon.

Salix Associates. 1992. Sandy River Delta Inventory. Unpublished. On file at Columbia River Gorge National Scenic Area, Hood River, Oregon.

USDA Forest Service, Columbia River Gorge National Scenic Area. 1994. Sandy River Delta Watershed Analysis. On file at Columbia River Gorge National Scenic Area, Hood River, Oregon.

USDA Forest Service, Columbia River Gorge National Scenic Area. 1996. Sandy River Delta Plan. Hood River, Oregon

USDA Forest Service, Columbia River Gorge National Scenic Area. 1996. Sandy River Delta Final Environmental Impact Statement. Hood River, Oregon

USDA Forest Service, Columbia River Gorge National Scenic Area and Mt. Hood National Forest. 1998. Columbia Tributaries East Watershed Analysis (in progress).

USDA Forest Service and USDI Bureau of Land Management. 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the range of the Northern Spotted Owl. (Also known as the Northwest Forest Plan).

Section 8. Relationships to other projects

The project is related to the Lower Columbia River Wetlands Restoration and Evaluation Program proposal. Both projects take place at Sandy River Delta, which is under common management by the Forest Service. Because the two projects have different partners and methods, they were separated into two proposals.

There are no known relationships with other funded FWP projects.

No special permits are required.

Section 9. Key personnel

Key Personnel

Robin Dobson. Restoration Project Manager.

Ecologist/Botanist, USDA Forest Service, Columbia River Gorge NSA. PFT

Degree: Doctorate - Plant Pathology

Experience: 6 years in plant pathology, 12+ years in ecology/botany

Recent work experience:

- Sandy River Delta team member, pilot reforestation project manager.
- Team Member, 5 watershed analyses.
- Restoration of "East Pit" gravel pit east of Hood River, Oregon.
- Natural resource evaluator for Columbia River Gorge land acquisitions..
- Fisheries restoration program team member.
- Noxious weed control team member.
- Natural resource planner for Management Plan for the Columbia River Gorge National Scenic Area.

Virginia Kelly. Sandy River Delta Team Leader.

Planning Team Leader: USDA Forest Service, Columbia River Gorge NSA. PFT

Degree: BA - Biology, MLA - Landscape Architecture/Environmental Planning.

Experience: 8 years with federal government.

Team leader on following projects:

- Sandy River Delta Master Plan and EIS, and Watershed Analysis
- Columbia Tributaries East Watershed Analysis
- Columbia Tributaries West Watershed Analysis
- CRGNSA Monitoring Strategy and Comprehensive Database
- Wells Island Open Space Plan
- Dog Mountain Open Space Plan
- Catherine Creek/Major Creek Open Space Plan

Richard Larson. Project Biologist

Fish and Wildlife Biologist, USDA Forest Service, Columbia River Gorge NSA. PFT

Degree: BS - Fisheries Biology.

Experience: 15+ years with federal government in fish/ wildlife program management.

Recent Projects:

- Sandy River Delta team member
- Team Member, 4 watershed analyses
- Project Manager: Multnomah Creek fisheries enhancement
- Project Manager: Good Bear Creek fisheries enhancement
- Program Manager: National Scenic Area Fish and Wildlife Biology

Assistant Personnel

Anderson, Eric. Project Assistant. Biological Technician, USDA Forest Service, Columbia River Gorge National Scenic Area.

Pierson, Christine. Project Assistant. Biological Technician, USDA Forest Service, Columbia River Gorge National Scenic Area.

Altman, Bob. Neo-tropical Monitoring Sub-contractor. Principal, Avifauna Northwest.

Section 10. Information/technology transfer

To our knowledge, no one else has tried to restore such a large expanse of riparian bottomland forest along this stretch of the Columbia for the purpose of native plant and animal community enhancement. Our problems with invasive and noxious weeds are common in this region. Our site prep and planting experiments (burn/plant, spray/plant, burn/spray/plant, etc.) would have applicability for other land managers in the area.

Results would be shared through informal networking with other land managers in the area.