
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Habitat Enhancement Within Transmission Corridors

BPA project number: 20126
Contract renewal date (mm/yyyy): **Multiple actions?**

Business name of agency, institution or organization requesting funding
USDA Forest Service, Zigzag Ranger District, Mt. Hood National Forest

Business acronym (if appropriate) _____

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses

7.6 Habitat Goals, Policies and Objectives; 7.7 Cooperative Habitat Protection and Improvement with Public Landowners; 7.7A Coordination of Watershed Activities; 7.7A.1-6; 7.8 Water Availability; 7.10K Passage into Historic Habitat

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references

Final Supplement Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl; Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl; Upper Sandy Watershed Analysis; Mt. Hood Land and Resource Management Plan; Final Environmental Impact Statement, Record of Decision and Mediated Agreement for the Control of Competing and Unwanted Vegetation, A Guide to Conducting Vegetation Management Projects in the Pacific Northwest Region, Columbia River Basin Fish and Wildlife Program and Amendments,

Short description

Change vegetation management practices to retain more tree and shrub cover; increase short and long-term coarse woody debris levels and input; reduce terrestrial and riparian habitat impacts; improve connectivity between upland and riparian habitats.

Target species

Lower Columbia River steelhead, coho and chinook and native cutthroat trout; Mid-Columbia

Section 2. Sorting and evaluation

Subbasin

Sandy and Deschutes

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input checked="" type="checkbox"/> Anadromous fish <input checked="" type="checkbox"/> Resident fish <input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Multi-year (milestone-based evaluation) <input type="checkbox"/> Watershed project evaluation	<input type="checkbox"/> Watershed councils/model watersheds <input checked="" type="checkbox"/> Information dissemination <input checked="" type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input type="checkbox"/> Research & monitoring <input checked="" type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Maintain transmission line and tower safety.	a	Prevent growth of vegetation into safety zone around each line and tower. Cut all vegetation within safety zone or which will grow into safety zone within 5 years around each line and tower.
		b	Maintain vegetation height within 35 feet of transmission tower at 3 feet or lower. Site prep and establish native grasses - use as seed source - and low shrubs - huckleberries, etc.
2	Improve and retain streamside shading, species and structural diversity.	a	Plant appropriate native trees and shrubs within riparian zone (except areas with well stocked and established tree/shrub component if desired/preferred species).
		b	Remove tallest vegetation/individuals encroaching into safety zones; thin remainder. Retain a mix of species including both trees and shrub species. Apply range of residual spacings.
		c	Prune trees to maintain and/or

			enhance shrub understory cover and shade.
		d	Use solar pathfinder to determine level of solar radiation reaching stream. Use on at least 4 of the streams with temperature monitoring stations.
		e	Establish camera points w/ associated photo points in representative stream areas. Photography bimonthly between May 1 and Oct 31 to visually monitor vegetative changes.
		f	Conduct stand exam every 5 to 10 years depending upon safety zone height (5 yrs if <20 ft; 10 yrs if >20 ft). Include data in district GIS.
		g	Develop and use special product sales to control vegetation. Limit amount of material removed during contract period. Where appropriate, collect KV funds for expected planting, thinning, pruning or other site betterment projects.
3	Reduce existing stream temperatures 1 to 4 degrees F below existing levels.	a	Establish temperature monitoring stations above and below where streams enter and leave the corridor. Establish stations on at least 8 streams along the length of the corridor within the district boundary. Monitor daily.
		b	Determine existing temperature regimes in the 8 streams.
		c	Monitor solar radiation reaching stream on at least 4 of the streams being monitored. Perform 1 time per year between June 15 and July 15.
		d	Locate and establish photomonitoring points within representative streamside/riparian areas to monitor canopy development and shading; 1 camera point & associated photo points per representative site. Monitor bimonthly between May 1 and Oct

			31 yearly.
		e	Establish and maintain an average shade cover of 75%; avoid actions which reduce cover below 50% (see objective 1a-c and f above).
4	Improve and maintain riparian travel corridors between upland, late successional habitats within the Bull Run Watershed Management Unit and high quality late successional and old growth habitats along the Clear Fork of the Sandy River.	a	Plant Douglas fir and western red cedar under existing red alder and black cottonwood stands. Thin and release existing, established understory conifers favoring cedar and Douglas fir. Convert from hardwood to predominately conifer stands within 30 yrs,
		b	Thin to increase diameter growth of Douglas fir and cedar present in overstory. Retain alder and other species for diversity.
		c	Prune 100-150 overstory conifers/acre to maintain/enhance understory development/diversity.
		d	Retain largest cut trees as snag or coarse woody debris; remove those excess to needs as firewood or other products. Collect KV funds to accomplish additional planting, thinning, pruning or other site improvement projects within the corridor.
		e	Conduct stand exam at least every 10 years to monitor stand development and identify treatment needs/opportunities to maintain or enhance desired habitat needs or characteristics. Incorporate data into district GIS system.
		f	Establish at least 1 camera point with associated photo points within each riparian travel corridor. Photograph yearly to monitor yearly vegetative changes.
5	Maintain/improve hiding cover and forage for wildlife.	a	Plant native shrub and tree species which produce nuts, fruits, berries or other food materials preferred by birds and animals.
		b	Thin vegetation at varying spacings;

			include random and irregular openings.
		c	Prune conifers to establish/maintain diverse and healthy understory vegetation.
		d	Maintain limited site distances into right-of-way corridor by retaining higher densities of trees, limiting the height and the number of trees pruned and by maintaining a healthy and vigorous understory.
		e	Develop and use special product contracts/sales to control the quantity and location of removals.
		f	Conduct stand exam at least every 10 years to monitor stand and vegetation development and condition and identify treatment needs/opportunities to maintain or enhance desired habitat needs or characteristics. Include in GIS system.
6	Increase the number and distribution of snags and coarse woody debris.	a	Identify sites/areas where transmission line/tower safety zone considerations allow trees to reach heights of 30 ft or more.
		b	Locate 5-10 trees per acre (DF or cedar preferred; others acceptable) suitable for retention/development as future snag/coarse woody debris recruitment. Thin all other trees away on a 20-25 ft spacing to increase diameter growth and increase limb size.
		c	Top any selected tree within 15 ft of the safety zone around lines; remove all live branches within 10 ft of the removed top to reduce the risk or need for future treatment.
		d	Obtain large logs (30 ft or greater in length, 24 inch diameter (small end)) from outside of the corridor area; place on sites where coarse woody debris is deficit, terrain less than 40% and with good access. Use ground

			based equipment.
7	Reduce the area and number of noxious weeds and other invasive non-native species.	a	Establish and maintain native vegetation to shade out or prevent the regeneration of scotch broom and other invasive species in areas where such species are limited in area or number.
		b	Implement biocontrol measures where there are large concentrations of invasive non-natives and/or noxious weeds.
		c	Develop and implement manual control measures to reduce the population and extent of scotch broom in the lower half of the powerline corridor.
		d	Conduct a stand exam at least every 10 years; include location and extent of existing noxious weed and other invasive non-native species.
8	Vegetation management activities will ultimately be self-supporting through the development and harvest special products or through funds generated by the sale of such products.	a	Finalize and implement the special products plan developed between 1990 and 1996.
		b	Work with BPA natural resource specialists and maintenance foremen to insure line and tower safety/access.
		c	Work with Warm Springs natural resources, Cultural and Heritage Committee and interested tribal members to address and meet tribal and tribal member needs and to meet treaty rights.
9	Technology transfer with Confederated Tribes of the Warm Springs	a	Assist tribal resource specialists/tribal members to identify existing agreements, contracts, constraints etc. and locations of activities with Warm Springs transmission line corridor.
		b	Assist tribal resource specialist to identify needs, opportunities, constraints within corridor. Use

			Zigzag experience as model.
10	Continued technology transfer with BPA natural resource specialists.	a	Encourage BPA natural resource specialist and line maintenance foreman participation in vegetation management project planning and development.
		b	Data collection and analysis, conceptual plan development for Larch Mountain transmission line corridor.
11	Technology transfer within the Forest Service, other governmental agencies and other land managers.	a	Provide technical expertise and experience to other forests, districts and other land managers (public and private) as requested.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	9/2099			15.00%
2	10/1999	9/2015	Establish and maintain streamside vegetation including species and structural diversity.		21.50%
3	10/1999	9/2009	Reduce current stream temperatures 1-4 degrees F.		2.50%
4	10/1999	9/2099	Increase species and structural diversity; increase number of large Douglas fir and western red cedar.		5.00%
	10/1999	9/2099	Increase number, distribution and creation of snags; increase number and distribution of coarse woody debris		5.00%
5	10/1999	9/2099	Establish and maintain diverse wildlife forage and cover; favor berries, nuts etc.		10.00%
6	10/1999	9/2099	Develop 5-10 trees per		5.00%

			acre of large diameter trees for future snag recruitment and future coarse woody debris input (also objective 4).		
	10/1999	9/2002	Increase number and distribution of coarse woody debris.		10.00%
7	10/1999	9/2099	Reduce the number and area of noxious weeds and other invasive non-native plants.		10.00%
8	10/1999	9/2014			1.00%
9	10/1999	9/2099			5.00%
10	10/1999	9/2099			5.00%
11	10/1999	9/2099			5.00%
				Total	100.00%

Schedule constraints

Plans will need to be updated or completed to identify specific locations and projects. NEPA analysis will be necessary for all project work. Specialists may be unavailable or have limited time to do planning, analysis and implementation.

Completion date

2015 - work is projected to be continuous but product sales are expected to produce funding necessary to do most of the work after 2014.

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	400 days @ GS-9; 400 days@ GS-7 - \$90,000	%29	90,000
Fringe benefits	39000	%12	39,000
Supplies, materials, non-expendable property	\$13,000 - temperature gauges, seedlings and incidental supplies.	%4	13,000
Operations & maintenance	\$90,000 for TSI, planting, stand exam and coarse wood debris placement contracts	%29	90,000
Capital acquisitions or			0

improvements (e.g. land, buildings, major equip.)			
NEPA costs	1 analysis for all projects for 5 years, 2000-2004: \$20,000	%4	15,000
Construction-related support			0
PIT tags	# of tags: 0		0
Travel	\$7500 for rigs (FOR & Mileage), travel, etc.	%2	7,500
Indirect costs			
Subcontractor			
Subcontractor			
Other	District overhead @ 21%	%17	54,000
TOTAL BPA FY2000 BUDGET REQUEST			\$308,500

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
USFS	KV collections from special product sales	%1	4,500
BPA	Site Prep - Dozer rental @\$65/hr for 40 hr.	%0	2,600
Total project cost (including BPA portion)			\$315,600

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$170,000	\$177,000	\$184,000	\$191,000

Section 6. References

Watershed?	Reference
<input type="checkbox"/>	Mt. Hood National Forest. 1990 Land and Resource Manage Plan Mt. Hood National Forest USDA Forest Service, Sandy OR.
<input checked="" type="checkbox"/>	USDA Forest Service and USDI Bureau of Land Management. 1994 Final Supplemental Environmental Impact Statement for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl Portland, OR.
<input checked="" type="checkbox"/>	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 Portland, OR.
<input checked="" type="checkbox"/>	USDA Forest Service and USDI Bureau of Land Management 1994 Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl Portland, OR.
<input checked="" type="checkbox"/>	Mt. Hood National Forest 1996 Upper Sandy Watershed Analysis USDA Forest Service, Mt. Hood National Forest, Sandy, OR.
<input checked="" type="checkbox"/>	Zigzag Ranger District, Mt. Hood National Forest. 1994 Sandy River Subbasin BPA Powerline Right-of-Way Management Integrated Resource Analysis BPA Project No. 93-91, Zigzag Ranger District, Mt. Hood National Forest, Zigzag, OR.
<input checked="" type="checkbox"/>	Northwest Power Planning Council. 1994 and as amended 1995 Columbia River Basin Fish and Wildlife Program 94-55, Northwest Power Planning Council, Portland, OR.
<input type="checkbox"/>	USDA Forest Service, Pacific Northwest Region. 1990 A Guide to Conducting Vegetation Management Projects in the Pacific Northwest Region Forest Pest Management, Pacific Northwest Region, USDA Forest Service. Portland, OR.
<input type="checkbox"/>	USDA Forest Service, Pacific Northwest Region 1988 Record of Decision and Final Environmental Impact Statement for Managing Competing and Unwanted Vegetation Pacific Northwest Region, USDA Forest Service, Portland, OR.
<input type="checkbox"/>	Burns, Judge James M., US District Court for the District of Oregon 1989 Mediated Agreement between the Pacific Northwest Region, USDA Forest Service and Northwest Coalition for Alternatives to Pesticides, et. al.

PART II - NARRATIVE

Section 7. Abstract

This project proposes to change vegetation management within a high voltage transmission line corridor. It proposes to develop, enhance and maintain fish and wildlife habitat while maintaining transmission tower and line safety and the safe and efficient transport of electrical power. It proposes to use the development, management and harvest of special forest products to do much of the vegetation management and to help the program ultimately become economically self-sufficient. The project will restore connectivity between late successional and old growth habitats separated by a regularly disturbed transmission corridor. Snag and coarse woody debris numbers and distribution will be enhanced where feasible and practicable. Controlling vegetation which affects or will affect line and tower safety will increase hiding cover, reduce sight distances and enhance forage for wildlife and maintain higher shading levels along streams. Monitoring

and evaluation will include periodic and regular vegetation exams, photo monitoring and the establishment and monitoring of stream temperature gauges. The project will continue as long as there are transmission lines in the Lolo Pass area.

Section 8. Project description

a. Technical and/or scientific background

Development of the powerline corridor from the Columbia River dams over Lolo Pass to the Willamette Valley started in the late 1940's with the current configuration being completed by 1971. The corridor extends from Lolo Pass in a southwesterly direction for approximately 5.3 miles to the Zigzag Ranger District/National Forest boundary. The majority of the corridor is located within the Clear Fork of the Sandy River subbasin (approximately 3.5-4 miles) with the remainder with the upper Sandy basin. The Bull Run Management Unit, which includes Portland's municipal water source, the Bull Run Watershed, is located immediately north and northwest of the corridor and shares a common boundary with the corridor along the upper 3 miles on the Zigzag District. Approximately 1 mile of the corridor at the bottom of Lolo Pass and near the district/forest boundary is located at least partially within the boundaries of the Upper Sandy Wild and Scenic River, a congressionally designated wild and scenic river.

There are at least 8 perennial streams which traverse the width or a portion of the length of the corridor which are significant tributaries of the Clear Fork of the Sandy River. One, located at the top of Lolo Pass, can be considered to be part of the headwaters of the Clear Fork. All flow out from the Bull Run Management Unit. There are also an unknown number of other smaller perennial and intermittent streams which begin or flow across the width of the corridor in addition to approximately 20 wetland or hydrated sites which were likely created or expanded by the clearing of the corridor.

The Clear Fork of the Sandy River is an important tributary for both anadromous and native fish. An important spawning area for coho and Chinook salmon and steelhead is located above the confluence of the Clear Fork with the Muddy Fork of the Sandy. This area has been designated and managed as a key site riparian area in the Mt. Hood Forest Plan. Many of the lower tributaries to the Clear Fork also have the same species found in their lower reaches near their confluence with the Clear Fork. Upstream in the Clear Fork and in many of the larger tributaries, resident native cutthroat trout are also present.

The corridor was constructed by completely removing all standing trees. The original clearing was for a single set of towers during the late 1940s and early 1950s. At least 3 additional clearings to widen the corridor were made; in most the corridor an additional 2 tower sets were constructed with a fourth set added in the upper half of the corridor. Additional clearing was performed near the district/forest boundary and in the upper half to add an additional set of towers; those towers were never constructed. Lolo Pass Road, FR 18, was constructed to facilitate the clearing and construction of the towers and lines. For the lower 1 to 2 miles, it followed an early road; for much of the rest, it followed an

existing and historic Indian trail up and over Lolo Pass. Culverts rather than bridges were used to cross streams. Culverts were commonly undersized and have been subject to blockage by debris flushed during heavy rains or debris torrents in stream channels. Additional roads were constructed to provide access to construct towers and to perform maintenance on both lines and towers. Historically, such access roads had limited or no provisions for drainage; culverts, drain dips or water bars were rare, widely spaced or nonexistent. If present they were commonly poorly maintained. Many access roads ran, and in many cases continue to run, at right angles to the contour while others have gradients of 10-15% or more. Most access roads are rarely used and therefore are allowed to be overgrown with vegetation. Reopening such roads has historically involved running a bulldozer down them and digging up, plowing and piling the accumulated vegetation into small windrows adjacent to the road and, in some instances, adjacent to or into streams or riparian areas.

Control of vegetation to maintain transmission line and tower safety has historically been done by complete removal of everything capable of creating a safety hazard or inhibiting or prohibiting access to towers or lines for repair or maintenance. Herbicides are believed to have dominated early efforts; since the late 1970s or early 1980s, control of vegetation within the corridor on the Zigzag District has been accomplished by manual methods, primarily cutting with chain saws or other equipment. The district and the Bonneville Power Administration (BPA) have had a standing Memorandum of Understanding (MOU) that does not allow BPA to use herbicides because of the proximity to the Bull Run Watershed and the concern about herbicide drift into drinking water. Prescriptions to control vegetation have been relatively simple; cut everything down that is or has the potential to grow into the safety zone within 5-7 years. The practical effect has been to essentially clearcut all trees and often the taller shrubs (10 feet or more) and leaving only shorter vegetation. BPA has historically done the work; the district has only treated plantations and several small cleared areas immediately adjacent to the corridor.

For the last 30-35 years, the district has used the corridor as a place to harvest a variety of special forest products including transplants, Christmas trees, firewood and posts and poles. With the increasing interest in special forest products starting in the mid 1980s and continuing today, the district began to look at using the corridor as an area for product development, management and harvest. A survey was done between 1988 and 1992 which looked at existing vegetation, physical site conditions and characteristics (slope, aspect, wetland and hydrated site locations, streams, etc.), ground to line distances, road locations and the like. A draft product development proposal, site maps and proposed management directions were developed. The development management and harvest was proposed as the tool to be used to control the competing or unwanted vegetation, maintain or enhance wildlife and riparian habitats, reduce management costs and generate income for maintenance and enhancement activities.

In 1994, an integrated resource analysis (IRA) was completed which incorporated much of the survey work and analysis but also looked at and focused on wildlife and fisheries habitat needs and requirements. The "Sandy River Subbasin BPA Powerline Right-of-

Way Management Integrated Resource Analysis” was funded by BPA to look at the management within the entire corridor on the Zigzag District. It incorporated direction outlined in a series of documents including but not limited to the 1990 Mt. Hood **Land and Resource Management Plan**, the **Forest Ecosystem Management Assessment Team (FEMAT) Report(1993)**, and the **Final Supplemental Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl** (Northwest Forest Plan). The IRA made a series of recommendations and proposed a number of projects to address those recommendations. The IRA noted that maintenance of low stream temperatures had been one of the most critical issues identified in planning efforts associated with timber sales and other management activities within the corridor.

The **Upper Sandy National Wild and Scenic River Environmental Assessment and Management Plan** were completed in 1994. Only a portion of the lower powerline corridor is located within the wild and scenic river corridor. However, 4 of the 5 outstandingly remarkable values include scenery, fisheries, recreation and botanical, values which are also important within the powerline corridor. The environmental assessment and plan amend the Mt. Hood forest plan and prescribe a number of management actions and projects to protect, enhance or maintain those outstanding values within the wild and scenic river corridor. Management activities and projects are similar to or identical to those identified and recommended within the IRA, the Northwest Forest Plan and other documents.

The Upper Sandy Watershed Analysis was completed in 1996. A number of projects were proposed within the Clear Fork and upper Sandy which include all or portions of the corridor area. Such projects propose restoring connectivity between late seral habitats, improving stand structural diversity and complexity, improving snag and coarse woody debris levels, improving structure and diversity of riparian vegetation, meeting state water quality standards, restoring peak flows to within the range of natural variation or minimizing the increase in peak flows due to management practices and controlling and decreasing noxious weed populations. Each of these projects addresses one or more of the Aquatic Conservation Objectives as outlined in the Northwest Forest Plan and further support the recommendations and projects as described in the IRA.

During 1997 and 1998, the district initiated planning and analysis to obliterate, close or relocate access roads within the corridor. The district worked with BPA maintenance personnel to identify roads which were unnecessary to BPA needs or which could be relocated to reduce erosion and riparian impacts. During 1998, 6.7 miles of access roads were closed or obliterated by BPA and the district; an additional 0.7 miles which currently have streams running in them will be restored when appropriate NEPA work is completed. At the bottom of the pass, an informal shooting range located within a riparian reserve, was closed to vehicle access and the district is using it as dump site for soil material from other engineering projects. The objective is to restore vegetation and the intermittent stream that traverses the site. This project is ongoing as funding and personnel permit. A

replacement target range site was identified further up Lolo Pass and which is away from streams and riparian areas. Preliminary engineering and construction has been done and the site is currently being used. Additional work is expected dependent upon funding and personnel.

Discussions have been held between district silviculture personnel, specifically John R. Davis, and BPA natural resource specialist Jim Jellison, to modify current vegetation management activities within safety considerations and constraints. A generic thinning prescription was developed and was applied on approximately 165 acres of corridor lands on the Zigzag District during 1998. BPA developed and administered the contract with technical assistance from Davis. This is a continuation of discussions initiated in the late 1980s and early 1990s with both BPA maintenance foremen and natural resource specialists.

Standard forest management practices have been applied to existing plantations within the subbasin. Species diversity was enhanced by retaining hardwoods and a mix of conifers both within riparian zones and adjacent upland terrestrial sites. Planting of trees and shrubs within the transmission line corridor has also been done including placement within riparian zones. However, as much of the activity predates the Northwest Forest Plan and FWP, fish and wildlife issues and concerns were of lesser importance than at present.

The district has had temperature gauging stations within the Clear Fork subbasin. One has been located about the spawning beds on the lower end of the Clear Fork. A second one has been located at the confluence of Chance Creek and the Clear Fork. None have been established on any tributary of the Clear Fork which flows across the transmission line corridor.

During 1996 and 1997, the district implemented 2 small scale projects to control the extent of scotch broom in the corridor. Between 5 and 10 acres of scotch broom was pulled near the bottom of Lolo Pass. During road maintenance and road obliteration/restoration work in 1998, small areas of scotch broom were also dug up by crawlers. Oregon Department of Agriculture has released some biocontrol agents for scotch broom and other noxious weeds in the Lolo Pass area. The agents employed were primarily seed and root beetles.

The Mt. Hood National Forest and the Zigzag Ranger District are currently working with the Confederated Tribes of the Warm Springs to implement a Memorandum of Understanding between the forest and the tribes to manage huckleberry and other treaty rights resources described in the 1855 treaty between the United States and the Confederated Tribes. The Zigzag District is cooperating with the Confederated Tribes and Oregon State University on the Warm Springs Sustainability Project, a Ford Foundation funded 2 year research project, to study cultural and resource sustainability including how the MOU between the forest and tribes is implemented. The district and forest has provided and continues to provide a variety of resources for cultural, religious and other uses. Within the powerline corridor, tribal members or organizations have

harvested alder to smoke both fish and game. Historically, tribal members have used the Sandy and Clear Fork basins to fish, hunt and harvest berries and other foods. Lands in the Lolo Pass area on the Zigzag District are usual and accustomed lands on which rights were retained although they do not have the same status as lands identified as ceded lands.

b. Rationale and significance to Regional Programs

According to the **Columbia River Basin Fish and Wildlife Program** (1994), the goals and objectives are to support “the long-term sustainability of native fish and wildlife species in native habitats where possible,” and where the ecosystem has been irrevocably been changed, to “protect and enhance the ecosystem that remains.”

This project proposes to change the manner in which vegetation within powerline corridors is controlled to maintain line and tower safety. It proposes to re-establish and then maintain healthy and diverse vegetation adjacent to streams which traverse powerline corridors by targeting suitable native species that will require minimal or no work to remain outside the designated safety zone. Where ground to line distances allow the development of taller vegetation, establishment and development of local native species which provide forage, hiding or other cover would be developed and managed. Snag habitat and at least some coarse woody debris development may also be possible in some areas. These actions are also likely to increase the number of usable travel corridors linking upslope terrestrial and late successional habitats with downslope late successional/old growth habitats along the Clear Fork. Use of thinning and pruning to maintain or enhance understory vegetation would also maintain both plant and animal species diversity. In deeper drainages, activities would focus on the accelerated development of late successional habitat and maintenance and enhancement of travel corridors between existing late successional habitat in the Bull Run LSR to the north and the late successional/old growth habitat present along much of the length of the Clear Fork of the Sandy River. Such sites are also prime candidate sites for snag and coarse woody debris development.

Activities proposed within the corridor are linked directly to goals, objectives, concerns and opportunities described not only in the FWP goals but also those listed in the IRA, the Northwest Forest Plan, the Mt. Hood forest plan, the Upper Sandy watershed analysis and the Upper Sandy Wild and Scenic River management plan. The proposed actions address the need to establish and maintain native vegetation which in turn creates both riparian and upland terrestrial habitat. By addressing the management of vegetation, which by definition is competing and unwanted because it affects powerline and tower safety, the proposed actions also meet the Mediated Agreement by adopting a prevention strategy which reduces or eliminates the need to utilize herbicides for vegetation control. Impacts to wildlife and fisheries resources are further reduced by reducing the extent and duration of disturbance impacts.

This project would mitigate losses in place, losses which continue under existing vegetation strategies. If special products development and management is implemented, it is likely that the sale and harvest of such materials would generate sufficient funds to reduce or eliminate management costs over time. Such activities would place more people on site and is expected to increase the quality of management being practiced. This is also more likely to generate acceptance and support for meeting or exceeding best management practice standards and developing management practices and techniques that not only increase profits but reduce short and long-term impacts.

Although passive management can be expected to produce at least some of the expected results if given sufficient time, the need to control vegetation for line and tower safety limits what benefits can be obtained and precludes others. Active intervention through planned and programmed activities triggered by monitoring and established guidelines, increases the probability of meeting stated objectives and retaining those conditions and habitats desired. As long as transmission lines remain above ground and in the Lolo Pass area, vegetation management will be required; this project integrates that into what is known about vegetation development and response in this area and utilizes that knowledge and experience to both control what vegetation needs to be controlled and retain that which can provide and maintain other resource values.

Information and experience gained from this project, including that already obtained from previous work, would be applied to working with members of the Confederated Tribes of the Warm Springs, including natural resources personnel, tribal members and other interested persons, on the powerline corridor which traverses the reservation. Forest Service personnel would act as technical specialists/consultants with the Tribes developing and implementing activities and projects specific to their conditions and needs. Information and experience would also be available to other resource managers attempting to manage lands with other utility corridors. Although it is unlikely that this type of project will necessarily be suitable, acceptable or desirable in all locations, it is expected that it will provide a viable option or options to many resource managers.

c. Relationships to other projects

This project is primarily related to on-going vegetation control projects currently conducted by BPA across all land ownerships. On some ownerships, production of special products such as Christmas trees or growing agricultural crops is a regular management practice. However, on most forest lands, costs and returns of such activities have been limited and landowners commonly abandon such efforts. By focusing on managing an early seral forest with multiple species and objectives, this project expects to identify strategies that will be successful for a range of landowners and provide incentives to improve management practices and achieve multiple objectives. This requires the district and BPA to work together to plan and schedule treatment activities. Including participation of the Confederated Tribes of the Warm Springs increases the potential of

success and helps to address treaty rights issues which include fish, wildlife and plant resources.

The district and BPA have recently obliterated or restored 6.7 miles of access roads within the corridor. Access roads are considered by district fisheries specialists as major sediment contributors to the tributaries of the Clear Fork. Those roads provided access to towers and lines for the purpose of maintenance. Obliterated roads, 1.6 miles, were excess to BPA needs, provided access for past vegetation management activities or were duplicate access roads to towers. 5.1 miles were restored; drainage dips, culverts etc. were placed to redirect water, reduce maintenance costs, improve access and the like. An additional 0.7 miles of road remain to be obliterated or fixed; because streams currently run down them, additional NEPA work is required to deal with them.

The Zigzag District is currently cooperating with the Confederated Tribes of the Warm Springs and Oregon State University in the Warm Springs Sustainability Project in which the sustainability of cultural and natural resources is a major component. The Tribes are seriously interested in diversifying their economic base on the reservation as well as preserving and managing the range of cultural, religious and other resources both on the reservation and ceded lands as well as the usual and accustomed lands. Areas where special product development and management in conjunction with habitat protection and improvement is a logical progression. Information, knowledge and experience gained from this project could be practically applied within utility corridors on the reservation. In both sites, such strategies would be expected to reduce the need or impact from the harvest of similar products from other, more sensitive sites elsewhere.

It is likely that this project is related to other projects within the Columbia River basin but the district is unaware of anyone doing or proposing a similar type of management program for utility corridors. The Forest Service, Bureau of Land Management (BLM) and other federal agencies are constantly developing and implementing projects to address issues raised in local watershed analyses, the ROD, FEMAT report and forest plans, all of which have many of the same goals and objectives as the FWP. This project proposes to apply similar strategies to lands currently not being managed to help maintain and enhance fish and wildlife habitats.

d. Project history (for ongoing projects)

Not applicable - new project.

e. Proposal objectives

Objective 1 - maintain transmission line and tower safety. This is the primary objective for this project. This can be measured by how often and how much vegetation must be cut because it encroaches on the safety zones around the lines or inhibits or prohibits vehicular access to transmission towers or lines for repair or maintenance. A secondary measure will be how much of the control activity will be done by special

product sales. Ideally, 100% of the vegetation would be controlled before encroaching the safety zones or inhibiting vehicular access by encouraging or requiring removal through contract provisions in special product sales and sale contracts. However, for at least the next 10-15 years, the majority of the vegetation management needed will require appropriated funds and service contract or force account crews; encroachment is expected but the number and periodicity is expected to decline over time.

Objective 2 - improving streamside shading and species and structural diversity.

There are several measurement methods to evaluate this objective. Increased shading and shading effectiveness will be measured by measuring stream temperature. Species and structural diversity will be measured by periodic stand exams which identify and quantify species diversity, numbers and sizes. Diversity will also be measured by establishing and maintaining camera points with associated photo points which will be photographed on a regular basis. It is expected to see a drop in average stream temperature of from 1 to 4 degrees F depending upon the type, size and quantity of shading provided and maintained. It is also expected that diversity and vegetation size will vary in part depending upon the distance between the stream and the safety zone around each line or tower. Smaller temperature declines are expected where only low shrubs can be retained or tree cover is more limited. The development, management and harvest of special products is not expected to affect shading or diversity beyond that described above.

Objective 3 - reducing stream temperatures 1-4 degrees F below existing levels. This objective will be measured by establishing temperature monitoring stations above and below the transmission corridor in at least 8 streams along the length of the corridor. A baseline average stream temperature will be established for each of the monitored streams. Outyear monitoring is expected to show average stream temperature declines of 1 to 4 degrees F below baseline levels as vegetation is retained and allowed to develop. Fluctuations are expected as vegetation is treated to maintain line and tower safety or through special product sales but such fluctuations are expected to retain average temperatures below the baseline and then return to the lower levels within 1-2 years. Use of solar pathfinders will identify the levels of solar radiation reaching each stream which is expected to further correlate vegetative structure with stream temperatures.

Objective 4 - improve and maintain riparian travel corridors between up and downslope late successional and old growth habitats. Periodic stand exams would be utilized to monitor vegetation development; wildlife surveys to monitor usage. At least one camera point with associated photo points would be established and monitored at least yearly to also monitor vegetative change.

There are several possible outcomes depending upon location. Where drainages are relatively deep and the ground to line distance allows trees to become relatively tall (50 feet or more), existing hardwood or hardwood dominated stands are expected to be converted to predominately conifer stands (at least 60% conifer by number in the overstory) dominated by Douglas fir and/or western red cedar within 30 years. The expected long-term outcome is the establishment and maintenance of a mature, late

successional or old growth character stand constrained only by line and tower safety considerations. Snag and coarse woody debris development in addition to relatively large tree diameters are expected in the long term. Multiple canopy layers with a diverse overstory and understory are likely to develop. Use by wildlife is expected to be the greatest within these areas.

Where ground to line distances allow tree heights of between 10 and 50 feet, at least some of the characteristics of late successional or old growth forests are expected to be present. Snags and coarse woody debris is expected but smaller in size (diameter and height). Where heights are less than 30 feet, snag development is expected to be minimal and larger coarse woody debris (greater than 16 inches diameter) nonexistent. Stands are expected to be conifer dominated with Douglas fir and cedar being the dominant species. Species diversity, both overstory and understory, is projected to be relatively high due to retention of hardwoods, thinning and pruning of at least some of the conifer overstory. Use by wildlife is expected to be less than areas where there are taller trees and greater species and structural diversity but more than areas where vegetation is limited to heights of 10 feet or less.

Areas with vegetation heights of 10 feet or less are not expected to function as effective travel corridors for many species. Use is expected to be very limited. Although species diversity will likely be high, structural diversity and snag and coarse woody debris habitats will be limited or non-existent.

The development, management or harvest of special products is not expected to have any effects other than those described elsewhere.

Objective 5 - maintaining and improving hiding cover and forage for wildlife. This objective will be measured by establishing and maintaining a range of desired and suitable forage and food producing native plants within the corridor. It will be monitored by periodic stand exams which will determine stocking levels and distribution. Existing forage and browse species are expected to increase in numbers and quality as suitable conditions are established and retained. Fluctuations are expected between sites but overall production and populations are expected to experience at least some level of increase.

The objective will also be measured by the number of trees and shrubs per acre over 5 feet in height which can hide most or all of a deer or elk. An adjunct measure will be sight distances into the corridor being maintained at 50 feet or less. Due to safety zone constraints, some areas will not meet sight distance or stocking objectives at any point. For most of the others, it will take an estimated 3-5 years to establish suitable stocking levels and to begin to establish and develop replacements.

Objective 6 - increasing the number and distribution of snags and coarse woody debris. This objective will be measured by the number of snags and logs/trees present or developed. No snags are expected in much of the corridor due to safety concerns and the

inability to grow trees large enough to make effective snags. Coarse woody debris development and recruitment is expected to similarly limited. However, coarse woody debris would be brought in to sites with good existing access and where ground based equipment could operate safely and with minimal impacts. Due to operating limitations and safety concerns, placement of such materials on other sites is not possible.

Objective 7 - reducing the area and numbers of noxious weeds and other invasive non-native weeds. This objective will be measured by the number of acres containing noxious weeds or invasive non-natives. Stand exams and periodic visual inspections will be utilized to monitor the area and extent of such species. Because of the number of roads and the continuing maintenance, habitat for such species cannot and will not be eliminated. The expected outcome is to reduce the population and area of such species to as few sites as possible. In the short-term, control will largely be mechanical or biocontrol with insects in cooperation with the Oregon Department of Agriculture. Long-term, development and retention of taller shrub and tree vegetation is expected to reduce the need for mechanical or biocontrol efforts by controlling both populations and area through increased shading and competition. The majority of the future mechanical control efforts are expected to be done as part of multi-year special product sale contracts.

Objective 8 - economic self-sufficiency through special products development and sales. This objective will be measured in several ways. First will be the number of acres developed and managed by special products. The second will be the number of multi-year contracts and the number of acres under such contracts. The third will be the number of dollars generated by product sales. The fourth will be the number of dollars collected and retained through Knutson-Vandenberg (KV) collections on product sales. For at least the next 3-5 years, and probably out at least 10-15 years, the number of dollars generated and the number of products developed and harvested will be limited with most activity and income associated with the harvest of Christmas trees and transplants. Income increases are expected to become obvious approximately 5-8 years after plantings or activities which enhance habitat are initiated. Yearly incomes from product sales are projected to be between \$25 and \$40 thousand dollars per year with full implementation and development of the special products plan.

Objective 9 - technology transfer with the Confederated Tribes of the Warm Springs. This objective will be met by working with the Tribes to develop and implement a similar program within their transmission line corridor. Long-term, this is expected to result in periodic meetings between the Forest Service and the Tribes to discuss common issues, problems and opportunities. It is also expected that the Tribes will provide technical assistance to the Forest Service relative to treaty right plants for tribal needs.

Objective 10 - technology transfer with BPA natural resource specialists. This objective will be met by working with BPA natural resource specialists to improve vegetation management activities within powerline corridors. The long-term expectation is that this will result in BPA providing technical expertise relative to transmission line and tower safety, perhaps funding a portion or all the required NEPA analysis and the Forest

Service integrating BPA needs and objectives into planned and contracted work activities. Because of common interests, concerns and opportunities, objectives 9 and 10 are projected to merge and the 3 organizations act in a collaborative and cooperative manner in dealing with all transmission corridors.

Objective 11 - technology transfer within the Forest Service, other governmental agencies and other public and private land/resource managers. It is expected that as this project becomes known, other land/resource managers will be interested in developing and implementing similar projects. The knowledge, information and experience developed in conjunction with this project would be available to any interested agency or organization contemplating such projects. A desired output of objectives 9, 10 and 11 would be the development of a report outlining the process used to develop and implement the vegetation management strategy in the corridor. The report could be utilized to help other land/resource managers develop and implement similar projects and provide some indication of expected results. Yearly reports of activities - species and numbers planted, quantities of products harvested, yearly sales, photo monitoring, stream temperature data, etc. - would be used to monitor ongoing activities and progress and to update the basic report.

f. Methods

The first task to be completed will be to complete the proposed special products management plan (objective 8, tasks a-c; objective 2, task f). The plan will identify management objectives for each segment of the corridor, describe appropriate management practices and requirements, describe and prescribe specific special products to be developed and managed and describe appropriate and feasible wildlife and fish habitat enhancements that will be accomplished in each section.

Concurrent with the plan development, an integrated and intensive stand exam will be performed on each management area (objective 2, task e; objective 4, task e; objective 5, task f; objective 7, task d). Using a mix of fixed and variable radius plots, existing vegetation will be inventoried. The information will be processed through either the R6 or other computer based stand exam program. The processed data will describe the existing vegetative structure within the corridor and, with the accompanied field notes, will provide an indication of the types of work that need to be planned and implemented. Existing noxious weed populations would be noted. This data will be utilized to finalize the corridor management plan and plan outyear activities by identifying areas requiring planting, thinning or pruning to develop, maintain or enhance specific conditions. It will also provide baseline data to monitor vegetation changes within the corridor after management activities have been implemented.

During the first year, baseline stream temperature monitoring would be performed (objective 3, tasks a and b). Using stream temperature gauges established above and

below the corridor, existing stream temperatures would be monitored between May 1 and October 31 (depending upon access). Temperatures would be recorded hourly. In addition, solar pathfinders would be used to measure solar radiation input into at least 4 of the 8 streams with temperature gauges. Solar radiation would be measured yearly when the overstory vegetation is fully leafed out. Surveys will be scheduled between June 15 and July 15 yearly. Readings will be taken every 100 feet (30 meters).

Depending upon vegetation characteristics within each riparian zone, at least one camera point would be established for each stream which is being monitored for temperature (objective 2, task d; objective 3, task c; objective 4, task f). Each camera point would contain at least 4 and up to 16 photo points. Each point would be used to monitor vegetative changes on a bimonthly basis between May 1 and October 31. Data analysis of stream temperature data would include correlation of the temperature information with corresponding vegetative conditions.

30-40,000 conifer tree seedlings and between 4 and 12,000 hardwood tree and shrub seedlings would be planted during the first year (objective 2 task a; objective 3 task d; objective 4 task a; objective 5 task a; and objective 7 task a). Because of the time line required to grow seedlings, stock would be either stock surplus to other reforestation/revegetation needs or purchased from commercial sources. It is expected that a significant number if not the majority of the conifer seedlings will noble fir for Christmas trees. Planting will be done by outside contractors with the Forest Service developing and administrating the contract or contracts. Some planting, probably less than 5 thousand seedlings, could be planted by force account and targeting difficult or small areas or unique or limited species. Subsequent years are projected to see the planting of more species specifically for riparian and wildlife enhancement.

Approximate 300 acres of sapling/pole sized areas would be either thinned, released or pruned or some combination of those activities (objective 2, tasks b and c; objective 4 task b-d; objective 5 tasks b-d; objective 6 tasks b and c). All work would be accomplished by outside contractors with the Forest Service developing and administering the contracts. All work would be accomplished by using chain saws, or in the case of pruning, by loppers or hand saws. Although the primary objective will be to maintain tower and line safety by reducing the height of the vegetation, where appropriate and feasible, trees for future snags and coarse woody debris would be identified and spacings increased. Approximately 10 acres would be pruned by hand to develop, maintain or enhance understory species and diversity. Acres targeted initially would be areas with limited understory diversity and development.

Up to 100 hours of equipment rental, a log truck and either rubber tired skidder or crawler tractor, would be hired to haul and place logs in accessible areas in the corridor for coarse woody debris habitat (objective 6 task d). Because of equipment limitations coupled with access limitations and safety concerns around lines and towers, locations would be limited to those with good road access and slopes generally under 30% but not more than 40%. Placement of such material into streams would not be done until better information was

collected and analyzed about existing conditions and specific sites identified. Where feasible, existing trees would be grown to provide long-term sources of such material.

No noxious weed or invasive plant control projects are proposed for 2000 (objective 7 tasks a-c). Ongoing work with Oregon Department of Agriculture would continue and focus on biocontrol agents specifically for the scotch broom in the corridor. Manual control projects would be planned during year 2000 and implemented in following years. Manual control is likely to be primarily pulling, digging or cutting with hand tools but could include the use of small equipment such as crawler tractors or backhoes or prescribed fire.

Technology transfer and information sharing (objectives 9 , 10 and 11) will be ongoing through meetings, training sessions and other similar activities. It is expected that much of this will occur through on-site discussions as projects are implemented or completed. Presentations and other more formal meetings are expected to be held as needed or as opportunities are presented.

Given current budgetary limitation within the Forest Service budget which are resulting in downsizing and the loss of personnel, the chance of full development and implementation of this proposal is limited. Much of the preliminary work associated with the special products plan and vegetation management proposals and activities has been done by or under the direction of John R. Davis. He is currently unfunded and is likely to transfer or be transferred to another position and/or another forest. As the development and implementation of a strong and integrated special products program is an integral part to making this proposal successful and becoming self-sustaining, this loss will be difficult to overcome.

There is little management support in the Forest Service or BPA for this type of project. Historically, landowners, including the Forest Service, have said they would manage the vegetation but changing budgets, management emphasis or other factors have usually resulted in the landowner failing to meet the agreed responsibilities. As a result, BPA has been increasingly resistant to establishing and permitting landowner management agreements. There is no evidence that management within the Forest Service or BPA is changing either the attitudes or lack of support for such management. There is however stronger support at the district and specialist level in part because of the views regarding ecosystem management and the perceived opportunities to do quality resource management.

This project has a chance to succeed because it involves special forest products and the Confederated Tribes of the Warm Springs. Special products provide a mechanism to involve more individuals and communities with land management activities which also have readily identifiable outcomes without significant adverse impacts. The Confederated Tribes bring a commitment and interest in resource management; they are an interested stakeholder in not only the salmon but also many of the other species of plants and animals

in the corridor area. They bring a perspective and a knowledge not generally seen in most resource management activities.

g. Facilities and equipment

This project would use primarily existing equipment and facilities. Seedling materials, to be planted within the corridor, would be grown on contract by either Forest Service (J.H. Stone) nursery or contract private nurseries. Seed, from which such seedlings would be grown, either has already been collected and is stored at J.H. Stone Nursery or would be collected 1-2 years prior to planting. Most if not all planting would be done by contract with contractors who supply labor and tools. Planting stock would be stored in the district cooler until planted. Stock material not planted by contract would be planted using force account crews; the district has sufficient planting tools to outfit such crews.

The district currently has a sufficient number of vehicles to transport all district specialists and other employees who would likely work on this project. The district also has sufficient numbers of computers, including both PCs and workstations with word processing, graphics, spreadsheet and other programs to allow for data processing, analysis and reporting. The district also has IBM compatible field data recorders for field data collection.

The district lacks sufficient numbers of stream temperature gauges to measure and monitor stream temperatures. Assuming a minimum of 2 gauges per stream and a minimum of 8 streams, at least 16 additional gauges would need to be purchased.

h. Budget

Much of the first year personnel cost is associated with updating and completing existing plans and proposals. This includes field work and data collection, data analysis and specific project development and prescriptions. All contract preparation, contract administration, contract inspection and incidental force account work costs are also included. It covers 1.5 FTEs at the GS-9 level (resource specialists) and 1.5 FTEs at the GS-7 level for 1 year.

Benefits includes all benefits associated with the FTEs planned under the personnel section.

Supplies, materials, nonexpendable property includes money for the purchase of stream temperature gauges, 30-50,000 tree seedlings at an estimated cost of \$220/thousand and between 4 and 12 thousand other trees or shrubs at approximately \$300/thousand other miscellaneous incidental supplies.

Operations and maintenance includes actual costs of contracts without administration, contract prep and related activities which are covered as part of personnel costs. Precommercial thinning/release costs are estimated at \$150/acre; pruning costs at \$1.00

per tree; planting costs at \$175/acre; and equipment rental for loading, hauling and placing logs for coarse woody debris at \$65/hr. Approximately 300 acres are proposed for precommercial thinning/release for an estimated contract cost of \$45,000; 10 acres of pruning or approximately 1000 trees for \$1,000; an estimated 100 hours of equipment rental for log haul and placement for coarse woody debris for \$6,500; and planting approximately 200 trees or shrubs per acre on approximately 200 acres for \$37,500.

No capital acquisitions are planned or expected.

A single NEPA analysis would be done for the entire corridor area. It would cover all expected projects within the corridor for a period of 5 years. The interdisciplinary team would include at least 4 members including a hydrologist, wildlife biologist or botanist, fisheries biologist and silviculturist. All would be funded for 10 days each for an estimated cost of \$8,000. The silviculturist, wildlife biologist or botanist and possibly the fisheries biologist would also be funded for additional days in the personnel portion of the budget because of their projected involvement in project planning, development and similar activities. An additional \$7,000 would fund GIS work, a landscape architect and recreation planner on the multidisciplinary team and other incidental costs such as public involvement activities, public notifications and other specialist time.

Construction related support and PIT tags are not required or expected.

Travel covers the FOR (vehicle payment) for 12 months and an estimated vehicle mileage of 1000 miles per month for approximately \$6,500. \$1,000 is estimated to cover per diem and expenses associated with travel away from the district including training and work with the Confederated Tribes of the Warm Springs.

None of the budgeted items includes district overhead for utilities, support and other activities. The district currently charges all projects 21% of the project budget for overhead.

Section 9. Key personnel

Name: JOHN R. DAVIS Title: silviculturist/silvicultural technician
Location: Zigzag Ranger District Employer: USDA Forest Service
Mt. Hood National Forest
Zigzag, OR 97049

Education: BS forestry, University of Minnesota 1974
Graduate studies in silviculture and forest ecology, University of
Washington 1978-1980

Experience: TSI technician/specialist 1984-1996 Planned, prescribed and
implemented district timber stand improvement program including
precommercial thinning and pruning.

- Stand exam specialist 1984-present Planned and implemented stand exams for timber sales, TSI and special product inventory.
- Special products specialist 1984-96 Developed and implemented district special products program including management and harvest practices and procedures.
- Silviculturist 1982 to present Intermittent Developed and wrote operational silvicultural prescriptions for timber sales and other resource management projects to achieve multiple objectives.

John has worked since 1982 on the Zigzag District as a volunteer, seasonal or permanent employee. He developed and implemented the current district special forest products program. He was instrumental in developing the proposals to utilize the BPA powerline corridor in the Lolo Pass area for special products development and in coordinating with fisheries and wildlife biologists to address issues, concerns and opportunities to also enhance and improve fish and wildlife habitat within the corridor. He has written operational prescriptions for timber sales within the Bull Run Watershed which protected water quality. He has also written prescriptions for timber sales which addressed forest health issues (Tabby, Salmonberry, Sherar, tsi), wildlife habitat enhancement (Salmonberry, Tabby, Sherar, tsi) and for special products development and enhancement and to address treaty rights (Salmonberry, tsi). He has continued to work with BPA resource specialists and line maintenance foremen to develop and implement vegetation strategies and practices which meet BPA objectives for safety and access to towers and lines while working to improve fish and wildlife habitat, special products opportunities and visual quality. John is currently working with the Confederated Tribes of the Warm Springs and Oregon State University on the Warm Springs Sustainability Project and is the designated liaison between the Tribes and the Mt. Hood for work associated with that project.

Additional personnel will be identified should this proposal be accepted and funded.

Section 10. Information/technology transfer

A desired outcome of this project is a report which would describe the process and progress of the project. Because of the continuing nature of the project, the report is expected to be regularly updated to reflect new information, changes in objectives or direction. It is expected that the report will be distributed to National Forests and ranger districts located within BPA's service area and also be made available to National Forests elsewhere with utility corridors or other similar landscape uses. Any report will also be distributed to the Confederated Tribes of the Warm Springs and made available to other tribes within the BPA service area. BLM districts, other federal land management agencies, other tribes and interested state agencies are expected to desire copies. Copies will also be available for other resource management organizations, both public and private, as well as interested individuals and organizations. When developing the report and associated updates, the report and updates may be placed on the internet and distributed through that medium rather than printing paper copies.

A major objective of this project is information/technology transfer, especially within the Mt. Hood and between the Forest Service, BPA and the Confederated Tribes of Warm Springs. Relationships are already established and being strengthened through ongoing resource management activities. This project is expected to enhance and broaden those relationships. The type of management activities proposed requires a great deal of cooperation and collaboration to meet the various goals and objectives of each organization. Information and technology transfer is expected to constant in the form of meetings, on-the-ground conversations, email and written documentation. Specialists in each organization are expected to bring their knowledge and expertise to the fore for the education and use of others to minimize duplication, to reduce costs and improve management.

Congratulations!